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DISEASES CAUSED BY BACTERIA AND FUNGI

Nakagawa, M. (1960). **Studies on bacteriophage typing of staphylococci isolated from bovine milk. I. Typing by means of 20 phages of the international series.**—Jap. J. vet. Res. 8, 191-207. [In English.] 2410

Of 375 strains of coagulase-positive staphylococci examined, using the phages at $10 \times$ R.T.D., 45.6% were typable. The phage patterns of 285 strains were analysed to determine whether the lytic groups of the international strains are applicable to bovine staphylococci. N. concluded that this phage series is unsuitable for typing the bovine staphylococci found in Japan.—IAN DAVIDSON.

Nakagawa, M. (1960). **Studies on bacteriophage typing of staphylococci isolated from bovine milk. II. Some observations on the lysogenic strains.**—Jap. J. vet. Res. 8, 279-284. [In English.] 2411

By cross plating 169 ultra violet light-irradiated, coagulase-positive strains of staphylococci selected at random from 272 strains isolated from cows' milk, 74 were found to be phage carriers and 121 were susceptible to any of the phages. Lysogenic strains were detected with almost equal frequency from phage typable (International series) and untypable strains. The majority of the carriers released phages which attacked strains of Types III and IV, but half the remainder carried phages which were active on strains resistant to the phages of the International series. More than half the phage carrying strains especially those attacking Type IV cultures were not lysogenic towards any of the propagating strains of the International series. The phage carried by lysogenic milk strains usually differed from the phage which attacked the strain. Lysogenicity did not seem to be an important factor in acquired phage resistance.—A. ACKROYD.

Pounden, W. D. & Frank, N. A. (1961). **Influence of forages on mastitis.**—J. Amer. vet. med. Ass. 138, 146-150. 2412

Attacks of mastitis were studied in four herds containing 30 to 50 cows for 3 consecutive years. About half the cows were affected each year and over 50% developed mastitis between one month after calving and one month after becoming pregnant. The predominating bacteria involved were haemolytic staphylococci and pseudomonas species. There was an apparent relationship between the mastitis attacks and the feeding of lucerne, Ladino clover and grass, either fresh or as silage. The possibility of a connexion between the oestrogenic content of the legumes in the diet and the mastitis is discussed.

—E. J. CASTLE.

Jungerman, P. (1961). **A potential source of bovine mastitis.**—Vet. Med. 56, No. 1 pp. 7-9. 2413

Swabs were taken of the infusion nozzles of 100 unused tubes and syringes containing antibiotics for the treatment of mastitis. *Staphylococcus aureus* was isolated from 14 and *Corynebacterium pyogenes* from 2. After the nozzles had been cleaned with cotton soaked in 70% isopropyl alcohol, 8 yielded staphylococci.—M.G.G.

Sato, G., Miura, S. & Ushijima, J. (1960). **An outbreak of hemolytic-streptococcal infection among chickens of a flock. II. Characters of the isolated streptococci.**—Jap. J. vet. Res. 8, 285-294. [In English.] 2414

Str. zooepidemicus was isolated from lung tissue and peritoneal exudate of a number of fowls from a flock of 56, six of which had died from septicaemia accompanied by respiratory symptoms. Six of 13 adult fowls, injected i/v or i/p with freshly isolated strains, or cultures 18 months old, or

suspensions in saline of naturally infected yolk, died with similar clin. symptoms one day to five weeks later. Mice and rabbits were susceptible, g.pigs appeared to be resistant.

—E.G.

Monteverde, J. J. & Simeone, D. H. (1958). *Streptococcus zooepidemicus* var. *rodentium*. Nueva variedad patógena natural para *Cavia cobaya*. [*Streptococcus zooepidemicus* infection in guinea-pigs.]—Rev. Fac. Agron. B. Aires 14, 237-256. [Summary in English.] 2415

Four outbreaks of streptococcus infection in g.pigs were described. All affected animals died. Treatment with penicillin was unsuccessful. As the organism was not beta-haemolytic, had little or no action on sorbite, and was pathogenic for rabbits, g.pigs and mice, the name *Streptococcus zooepidemicus* var. *rodentium* was proposed.—M.G.G.

Imaizumi, K., Tanaka, T., Ito, S., Tajima, Y. & Imai, A. (1960). [*Haemolytic streptococcosis of guinea-pigs. V. Relationship of bacteria and host animal.*]—Jap. J. vet. Sci. 22, 295-307. [In Japanese. Summary in English.] 2416

Japanese g.pigs were either susceptible or resistant to streptococci, but Hartley g.pigs imported from the U.S.A. were mostly resistant. Hereditary factors were considered responsible. Two streptococcal strains, one of high and one of moderate virulence, maintained their respective virulence during passage in g.pigs for 3 years. Biological and serological properties and pathogenicity for mice of these 2 strains and of a cultured strain of low virulence for g.pigs were identical.

—M.G.G.

Steffen, J. (1961). Przypadek węglik w fermie norek. [*Anthrax in mink.*]—Med. Wet., Warszawa 17, 141-142. [In Polish. Summaries in English, French, German and Russian.] 2417

In an outbreak 50 out of 80 mink became ill and 26 died within 3 days of being fed on anthrax contaminated meal containing bones of a cow which died of anthrax. On the third day all mink were given 100,000 units penicillin parenterally and no further deaths occurred.—M. GITTER.

McGann, V. G., Stearman, R. L. & Wright, G. G. (1961). *Studies on immunity in anthrax. VIII. Relationship of complement-*

fixing activity to protective activity of culture filtrates.—J. Immunol. 86, 458-464. 2418

There was significant correlation between the complement-fixation titres and the immunizing activity of the 'protective antigen' preparations in g.pigs.—R.M.

Roth, I. L., Lewis, C. W., Jr. & Williams, R. P. (1960). *Electron microscope study of Bacillus anthracis in mouse spleen.*—J. Bact. 80, 772-782. 2419

Electron micrographs are presented of ultra-thin sections of mouse spleen infected with *B. anthracis*. By fixing the tissue in unbuffered 2% potassium permanganate for 2 hours at room temperature followed by dehydration and embedding in araldite epoxy resin, both the bacterial cell and the host tissue were well preserved. A zone designated the cytopathic area consistently appears surrounding each bacterium whilst apparent disruption of host cell cytoplasmic membranes is visible. The bacterial cell wall appears to consist of dense edges separated by an 85 Å wide semi-transparent central area, whilst a cytoplasmic membrane is directly adjacent. Bacterial cell division appears to take place by the centripetal development of transverse walls with their associated cytoplasmic membranes.

—A. ACKROYD.

Lindley, E. P. (1960). *Bovine tuberculosis in Nigeria.*—Bull. epiz. Dis. Afr. 8, 309-316. [Summary in French. Author's summary modified.] 2420

Some statistics on the distribution and incidence of bovine TB. in Nigeria are presented. Distribution of lesions indicates that the pathogenesis in Nigeria does not differ significantly from that described elsewhere.

Johnson, H. W., Baisden, L. A. & Frank, A. H. (1961). *Recent research findings on bovine tuberculosis and their application in eradication.*—J. Amer. vet. med. Ass. 138, 239-243. 2421

From 1954 to 1959, the percentage of reactors to bovine tuberculin has risen in the U.S.A. from 0.11 to 0.23%. Although most of the increase is probably caused by an increase in *Mycobacterium tuberculosis* var. *bovis* infection, part may be attributable to improved techniques such as uniformity in tuberculin dose, needle size, criteria for interpretation of reaction, retest procedure and the tracing of slaughter cows with lesions to herds of origin and continuous testing of such herds. Dependence on gross P.M. findings

as the criteria for the reliability of the tuberculin test is unsatisfactory. If no lesions are found after adequate examination, an attempt should be made to isolate and identify the sensitizing organism. Among these are Johne's bacillus, avian and human tubercle bacilli and atypical acid-fast mycobacteria. Recently this last group has been found associated with disease processes in man. They can be divided into 4 groups: photochromogens, scotochromogens, non-photochromogens and rapid growers typified by *M. fortuitum* and *Nocardia*. Some relationship appears to exist between the last 3 groups and certain strains of bovine tubercle bacillus. The isolation of bovine tubercle bacilli from lymph nodes, the isolation and identification of atypical mycobacteria and the problems of cross-reactivity are discussed.—A. ACKROYD.

Vrzgula, L. (1961). Hodnoty niektorých mineráliev v krvnom sére hovädzieho dobytká postihnutého tuberkulózu. [**Serum mineral values in tuberculous cattle.**]—Vet. Čas. 10, 149-159. [In Slovak. Summaries in English, German and Russian.] 2422

Na, K and Ca content of serum in 102 tuberculin reactors was lower and the P content higher than in 121 healthy cattle. Mg levels were similar in the two groups. In 171 cattle with generalized or open pulmonary TB., calcium levels were markedly reduced.

—E.G.

Kleeberg, H. H. (1960). **The tuberculin test in cattle.**—J. S. Afr. vet. med. Ass. 31, 213-225. 2423

The factors affecting the single intradermal tuberculin test in cattle (the tester, the tuberculin, the instruments and technique used and the animal) and its interpretation are discussed in an attempt to standardize them. The accuracy and the factors affecting the intensity of the reaction and the development of non-specific reactions are considered.

—A. ACKROYD.

Placidi, L. & Saunié, L. (1961). I. Influence de la cortisone sur la réaction allergique à la tuberculine. II. Sur la sensibilisation à la tuberculine. [**I. Influence of cortisone on the tuberculin test in cows. II. Sensitization of sheep to tuberculin.**]—Bull. Acad. vét. Fr. 34, 63-67 & 69-76. 2424

Reactions of 8 cattle to the i/d tuberculin test were less pronounced after s/c injection of 0.75-2 g. of cortisone acetate. The reactions were weaker still in a second tuber-

culin test performed a month after the injection of cortisone. Cortisone did not diminish the tuberculin reaction in a cow in late pregnancy.

Three sheep were not sensitized to the i/d injection of tuberculin by rubbing the skin daily for up to 15 days with a mixture of crude tuberculin and vaseline oil, even if the skin had previously been exposed to 1% caustic soda for up to 8 days.—M.G.G.

Rankin, J. D. (1961). **Confirmation of a calculated ID50 of *Mycobacterium johnei* for the experimental production of Johne's disease in cattle.**—J. Path. Bact. 81, 539. [Author's summary modified.] 2425

Direct experiment confirms the previously calculated result [*V.B.* 29, 2734] that the dose of *Mycobacterium johnei* that will infect 50% of month-old calves is 5 mg. wet weight of the organism.

Fraser, G. (1961). **Haemolytic activity of *Corynebacterium ovis*.**—Nature, Lond. 189, 246. 2426

The Preisz-Nocard bacillus (*C. ovis*) which is responsible for a number of diseases in animals grows well on blood agar medium, producing colonies frequently surrounded by a zone of haemolysis. The haemolysin which is active against g.pig, rabbit, horse and sheep corpuscles, is thermostable, non-antigenic and appears closely linked to the bacterial cell. In mixed cultures of *C. ovis* and *C. equi* grown on nutrient blood agar plates in the presence of 10% CO₂, a synergic haemolytic effect was observed. The diffusible substance is active against sheep, goat, ox and rabbit cells but not horse cells and is filtrable and can be dialysed through cellophane.—A. ACKROYD.

Soltys, M. A. (1961). ***Corynebacterium suis* associated with a specific cystitis and pyelonephritis in pigs.**—J. Path. Bact. 81, 441-446. [Author's summary modified.] 2427

The organism was isolated from pyelonephritis, usually associated with pregnancy or parturition, in sows. It was found in sows only in association with pathological conditions, though it was frequently present in the urine, penile sheath and semen of apparently normal boars. The intrarenal injection of *C. suis* with 5% saponin initiated infection in sows which spread to the uninoculated kidney and other organs of the urogenital tract. *C. suis* was non-pathogenic to rabbits, g.pigs and mice.

Rossi, L. (1961). Studie imunisační účinnosti avirulentního kmene bakt. červenky vepřů. [Immunizing property of an avirulent strain of swine erysipelas bacillus.]—Vet. Čas. 10, 122-127. [In Czech.] 2428

Of 55 pigs vaccinated s/c with 3 ml. of a live avirulent swine erysipelas vaccine (Strain EVA), only 24 resisted intracutaneous challenge with virulent culture 18, 24 or 53 days later.—E.G.

Potel, J. & Degen, L. (1961). Die Bestimmung des Hämagglutiningehaltes von Erysipelothrix rhusiopathiae-Antigenen mittels der photometrischen Methode nach Drescher. [Photometric determination of haemagglutinin in E. rhusiopathiae antigens.]—Zbl. Bakt. I. (Orig.) 181, 395-406. [Summaries in English, French, Spanish and Russian.] 2429

Haemagglutinin was determined photometrically in serum-broth cultures of living *E. rhusiopathiae* or organisms killed by thiomersal or "thiozide", but not when they were killed by heat, phenol, or formol. The haemagglutinin content decreased only slightly after several months at +4°C. The adsorption of haemagglutinin to γ -aluminium oxide was determined.—M.G.G.

Katiyar, R. D. (1960). Listeriosis amongst sheep and goats in Uttar Pradesh.—Indian vet. J. 37, 620-623. 2430

The disease killed 25 goats in a herd of 85 but did not spread to the flock of 150 sheep sharing the same shed. Symptoms and P.M. findings were recorded.—R. N. MOHAN.

Dhanda, M. R., Sekariah, P. C., Lall, J. M. & Prakash, P. (1960). Immunological studies on *Pasteurella septica*. V. Further observations on the immunising efficacy of adjuvant vaccine.—Indian vet. J. 37, 597-606. 2431

In cattle inoculated with adjuvant vaccine, the skin-sensitizing, complement-fixing, agglutinating, and mouse-protective antibodies appeared in the peripheral blood in 3-4, 4-6, 6-10, and 14 days respectively, and persisted at diagnostically significant levels for 2 years. Of 156 vaccinated cattle, challenged in 17 batches of 2 to 37 at intervals up to 752 days, 144 survived, against none in 30 controls; and the percentage survival at individual tests was 75 to 100.

—R. N. MOHAN.

Bain, R. V. S. & Knox, K. W. (1961). The antigens of *Pasteurella multocida* Type I. II.

Lipopolysaccharides. — Immunology 4, 122-129. [Authors' summary modified.] 2432

Asian strains of *Pasteurella multocida* Type I were extracted with saline to remove superficial material and then with phenol-water to extract the lipopolysaccharides. This product was recovered from the aqueous phase by centrifuging at 105,000 g for 2 hours. The component sugars are galactose, glucose and glucosamine and a heptose sugar, possibly D-glycero-L-mannoheptose. The preparation was toxic for rabbits and was absorbed on human erythrocytes.

An Australian strain of *Past. multocida*, which by conventional mouse protection and haemagglutination tests was identified as Type I, yielded a lipopolysaccharide with different properties. Bovine haemorrhagic septicaemia caused by Type I in Asia, is unknown in Australia.

Smith, G. R. (1961). The characteristics of two types of *Pasteurella haemolytica* associated with different pathological conditions in sheep. — J. Path. Bact. 81, 431-440. [Author's summary modified.] 2433

A hundred strains of *Past. haemolytica* from sheep were classified in one of two types, A and T, on colonial morphology, fermentation reactions, growth curves and sensitivity to antibiotics. Type-A strains formed small, grey colonies on sheep blood agar and fermented arabinose within 7 days but not trehalose within 10 days, whilst type-T strains formed larger colonies with brownish centres and fermented trehalose within 2 days but not arabinose within 10 days. The A strains lost their viability more rapidly in aging broth cultures and were more sensitive to penicillin and tetracycline than T strains. Type-A strains were associated with enzootic pneumonia of lambs and sheep, and were the usual cause of septicaemic disease of young lambs. Septicaemic disease in older lambs was due to type-T infections.

Heddleston, K. L. & Reisinger, R. C. (1960). Studies on pasteurellosis. IV. Killed fowl cholera vaccine adsorbed on aluminium hydroxide. — Avian Diseases 4, 429-435. [Authors' summary modified.] 2434

An aluminium hydroxide adsorbed killed vaccine produced effective immunity to fowl cholera which lasted for at least 52 weeks. The mixing of unacquainted, vaccinated males at time of exposure to *Pasteurella* considerably lowered their resistance to infection. Birds

with fowl pox at time of vaccination were more susceptible to challenge than normal vaccinated fowls.

Ramisse (1961). Infection enzootique due à *Alcaligenes bronchisepticus* (observée dans un élevage de cobayes). [*Haemophilus bronchisepticus bronchopneumonia in a guinea-pig colony.*] — Rev. Méd. vét. 112, 118-120. [Summaries in English and Spanish.] 2435

H. bronchisepticus was isolated from an outbreak of acute contagious bronchopneumonia in a g.pig colony. The morphology, biochemical properties and sensitivity to antibiotics were studied. It was not pathogenic for mice, but caused peritonitis, pericarditis and bronchopneumonia in a g.pig that died after i/p infection.—M.G.G.

Wensinck, F. (1961). I. The origin of endogenous *Proteus mirabilis* bacteraemia in irradiated mice. II. The origin of induced *Pseudomonas aeruginosa* bacteraemia in irradiated mice. — J. Path. Bact. 81, 395-400 & 401-408. [Author's summaries modified.] 2436

I. The distribution of *Proteus mirabilis* in male mice was studied in an attempt to correlate its presence in the respiratory or intestinal tract with bacteraemia after irradiation. Nasal swabs, nasopharyngeal swabs and fresh faeces were repeatedly cultured during several weeks preceding X-irradiation with 700 r. The animals were classified as permanent, temporary and intermittent carriers, and non-carriers.

Permanent carriers commonly died with proteus bacteraemia after irradiation; this type of bacteraemia was rarely encountered in the non-carriers. Thus proteus bacteraemia was associated with the presence of *Proteus* in the nasopharynx. The portal of entry was in the respiratory tract and not the intestinal tract.

II. *Pseudomonas aeruginosa* was introduced into the respiratory or intestinal tract of mice after X-irradiation with 700 r. Nasal inoculation on the 3rd, 4th or 5th day after irradiation always led to bacteraemia, and the mean survival time after inoculation varied between 2 and 2½ days. Gastric instillation of the organism gave bacteraemia in about two-thirds of animals. It was concluded that pseudomonas bacteraemia originates from the respiratory tract whether the organism is inoculated into the respiratory tract or into

the stomach. Local damage to respiratory mucosa, invasiveness of the inoculated strain and impairment of cellular defence appeared to be the principal factors leading to bacteraemia.

Ewing, W. H., Suassuna, I. & Suassuna, I. R. (1960). The biochemical reactions of members of the genus *Proteus*. pp. 18. Atlanta, Georgia: Communicable Disease Center, U.S. Department of Health, Education, and Welfare. [Authors' abstr. modified.] 2437

The more comprehensive reports on the biochemical reactions of *Proteus* published during the past 15 years were reviewed and summarized. The results obtained in a study of the biochemical reactions given by 255 strains of the four species of *Proteus* were reported, summarized, and compared with those previously reported. Tests for the differentiation of cultures of *Proteus* at the generic or group level, and for the characterization of the four species of the genus, were tabulated. The value of tests for the decarboxylation of certain amino-acids in the classification of strains of this group was emphasized.

Pesti, L. (1960). Coli-baktériumok típusainak meghatározása egészséges és gyomor-bélhurutban beteg szopósmalacokban. [Typing of *E. coli* from healthy unweaned piglets and piglets with gastro-enteritis.]—Mag. állator. Lapja 15, 449-452. [In Hungarian. Summaries in English and Russian.] 2438

P. attempted to type 400 *E. coli* strains, 191 of them from piglets that died at 3-7 days of age from gastro-enteritis. Using 26 standard sera of Kauffmann's 1-124 serological O antigen range, 183 strains fell into one of the O groups, as did 142 of 230 strains from pigs with gastro-enteritis, and 41 of 170 strains from healthy pigs. It was noted that of the 183 strains, 103 reacted with one of 0 9, 0 21 or 0 28 antigen groups, and all originated from pigs with gastro-enteritis or their in-contacts. Bacteriological examinations P.M. showed conclusively that these strains never invade the blood stream, affecting only the gastro-intestinal tract. P. considers that *E. coli* strains belonging to the antigenic groups 0 9, 0 21, 0 28, play an important part in the aetiology of porcine gastro-enteritis.

—A. SEBESTENY.

Anderson, E. S. & Wilson, E. M. J. (1961). Die Bedeutung der *Salmonella typhi* murium-Phagen-Typisierung in der Human- und

Veterinärmedizin. [The importance of *Salmonella typhi-murium* phage-typing in human and veterinary medicine.] — Zbl. Bakt. I. (Orig.) 181, 368-373. [Summaries in English, French, Spanish and Russian. English summary modified.] 2439

A revised phage-typing scheme enabled the authors to subdivide this serotype on a finer basis than was hitherto possible. The phage-typing of organisms from animal sources on an increased scale has defined characteristic type distributions in particular animals. These distributions can be compared with that in man, and suggestions can thus be made concerning the origins of human infections.

Davis, E. A. & Russell, R. R. (1960). The isolation of *Salmonella anatum* from the pig and sheep in New Zealand.—N.Z. vet. J. 8, 116-117. 2440

The salmonella was isolated from the intestine of an unthrifty pig and from faeces of a lamb with diarrhoea that resisted treatment, the first isolations from animals in New Zealand. *S. cholerae-suis* was isolated also, from mesenteric lymph nodes of the pig.

—R.M.

Marthedal, H. E. (1960). *Salmonella gallinarum*, *Salmonella pullorum* og *Salmonella typhi murium*. Kulturelle, serologiske og epizootologiske undersøgelser samt studier over O-antigenstrukturen. [Cultural, serological and epidemiological studies on *S. gallinarum*, *S. pullorum* and *S. typhi-murium*, and the structure of their O antigens.] pp. 180. Copenhagen: A/S Carl Fr. Mortensen [Thesis, Copenhagen. Summary in English.] 2441

In Denmark, 189 of 320 outbreaks of salmonellosis in fowls were traced to hatcheries incubating duck and goose eggs also. Details were given of bacteriological and serological studies of 16 strains of *S. gallinarum*, 164 of *S. pullorum* and 1,011 of *S. typhi-murium*, isolated from poultry during 1946-55. *Salmonella* was present in 18 of 1,800 fowls examined at random and in 274 of 1,050 pigeons. 469 of 4,304 pigeons reacted to either O or H antigen. Of 205 reactors examined bacterologically, 133 were infected with *S. typhi-murium*.—E.G.

Saurat, P. & Lautié, R. (1961). La stérilisation des porteurs de germes pulloriques par la néomycine en association avec la terramycine. [Sterilization of carriers of *Salmonella pul-*

lorum by treatment with neomycin combined with oxytetracycline.]—Rev. Méd. vét. 112, 161-168. [Summaries in English and Spanish.] 2442

Four hens given i/v injections of *S. pullorum* killed by heat developed high agglutination titres which persisted for about 6 months. This explains the previous finding [see *V.B.* 30, 634] that hens cured of pullorum disease by treatment with neomycin and oxytetracycline continued to show high antibody titres. General use of this treatment is not recommended, because of the impossibility of distinguishing infected from cured birds.

—M.G.G.

Kulkarni, V. B., Sapre, S. N., Ajankye, S. M., Chatupale, W. V. & Parnaik, D. T. (1960). Record of combined infection of *Salmonella gallinarum* and avian leucosis complex (visceral form) in an outbreak in Bombay State.—Indian vet. J. 37, 463-468. 2443

The concurrent infections were responsible for much mortality in a Rhode Island Red flock. Lymphomatosis was observed in heart muscle, intestinal mucosa, and pancreas.

—R. N. MOHAN.

Mingle, C. K. (1961). Cooperative State-Federal brucellosis eradication.—Proc. 64th Ann. Meet. U.S. Livestock Sanit. Ass. Charleston, 1960. pp. 118-126. 2444

Since last year's report [*V.B.* 30, 3501] the eradication scheme was hampered by lack of funds, but progress was achieved by reduction in the proportion of reactions to diagnostic tests and by increase (19%) in the number of brucella-free counties. A market cattle testing plan was introduced in September 1959. This overcame the difficulties of testing beef cattle on ranges. Cattle sent for slaughter were identified by a special label glued onto the back by the farmer. Blood samples taken from these cattle at market or abattoir could be traced back to the farm by means of the code number on the label. During nine months 146,500 cattle were blood-tested this way and 0.7% gave positive reactions at titres of 1:100 or above.—R.M.

Mukerji, A. (1960). Bull as a spreader of contagious abortion with special reference to the methods of diagnosis of brucellosis in bull.—Indian vet. J. 37, 436-439. 2445

In a series of 70 breeding bulls located at different centres, M. recorded blood serum agglutinin titres of 1:40 in one, 1:20 in 2, and 1:10 in 22.—R. N. MOHAN.

Wenzel, S. (1960). Zur Histopathologie von Fetus und Plazenta bei der Brucellose des Rindes unter besonderer Berücksichtigung früher Krankheitsstadien. [**Histopathology of foetus and placenta in bovine brucellosis with special reference to early stages of the disease.**—Inaug. Diss., Hanover pp. 52. 2446

Foetal membranes, placentomes and organs of foetuses from 13 cows and heifers serologically positive for brucellosis, and from 16 non-reactors, were studied histologically. Findings in the two groups were similar and varied only in incidence and degree. They included hyaline degeneration of the connective tissue of primary villi, bloated endothelium in smaller chorionic vessels, cell necrobiosis in vascular walls and swelling of the muscular coat and adventitia of vessels. There was connective tissue proliferation and infiltration with histio-lymphocytic cells, and oedema. In the peduncle there were plasma cells or aggregates of plasma cell-like formations, accompanied by oedema. In foetal organs, findings were non-specific. The opinion was expressed that average to high incidence of the findings described, particularly during the 5th–7th month of pregnancy, was due to brucellosis of dam.—E.G.

Glenchur, H., Zinneman, H. H. & Hall, W. H. (1961). **Significance of the blocking antibody in experimental brucellosis.**—J. Immunol. 86, 421–426. [Authors' summary modified.] 2447

Hyperimmunization of rabbits with heat-killed *Brucella abortus* evoked blocking antibodies which appeared late and only if the antigenic dose was very large. Blocking antibody had a shifting electrophoretic mobility in rabbit and human serum proteins, varying with the duration of antigenic stimulation. Early, the blocking phenomenon appeared in the γ -globulins; with continued stimulation, the blocking antibodies migrated to the β -globulins.

The blocking phenomenon in a hyper-immunized rabbit disappeared 14 weeks after the cessation of heavy antigenic stimulation. It reappeared after a single injection of the same antigen 28 weeks after cessation.

These findings suggest that in the rabbit blocking antibody indicates continued antigenic stimulation or active infection by *Brucella*.

Trbić, B. (1960). [**Specificity of the c.f. reaction, using chloroform-extracted brucella antigen.**—Acta vet., Belgrade 10, No. 4 pp.

103–110. [In Serbian. Summary in German.] 2448

T. stated that chloroform extracted brucella antigen, prepared from Strain 19 and Strain 99 (Weybridge), is highly specific, remains active for 8 months when suitably stored, and may be used for the diagnosis of *Br. abortus* and *Br. suis* infection.—E.G.

Ugorski, L. & Strojna, S. (1960). Modyfikacja próby pierścieniowej (ABR) przy brucelozie bydła. [**Modification of the ring test for bovine brucellosis.**—Med. Wet., Warszawa 16, 723–724. [In Polish. Summaries in English and Russian.] 2449

Identical results were obtained when milk samples were examined by the standard ring test and a modification of Luoto's capillary tube method. Suspension of Strain 19 stained with tetrazolium salts or crystal violet was used as antigen and the test carried out in a capillary tube 12 cm. long and with a lumen of 0.4 mm. diam.—M. GITTER.

Lafenêtre, H., Carrère, L., Cortez, A., Vollhardt, Y. & Quatrefores, H. (1961). Vaccination des ovins contre la brucellose avec la souche vivante B.112 (culture en bouillon). [**Immunization of sheep against brucellosis with live Strain B 112.**—Bull. Acad. vét. Fr. 34, 57–62. 2450

Two ml. of broth culture containing 40 milliard live and dead *Br. abortus*, strain B 112, and diffused antigens, were injected s/c into 145 pregnant ewes. These and 89 unprotected sheep were challenged by contact with aborting ewes or s/c and/or conjunctival infection. Infection developed in 12% of the vaccinated animals and 53% of the controls. Tests in g.pigs revealed that the vaccine should be stored for not more than a week. A trial is now being carried out in 220 sheep to compare the efficiency of this vaccine with that of vaccines made from strains B 19, 53 H 38, 45/20, and S 6.—M.G.G.

Trumić, P., Majstorović, G. & Panječić, D. (1960). [**Serological diagnosis of brucellosis in swine.**—Acta vet., Belgrade 10, No. 4 pp. 73–80. [In Serbian. Summary in German.] 2451

Conventional serological tests for the diagnosis of porcine brucellosis proved unreliable, but a modified Coombs test with serum heated for 10 min. to 65°C. gave satisfactory results.—E.G.

Dymowska, Z. & Parnas, J. [Edited by] (1960). *Leptospirae and leptospirosis in man and animals. Material of the International Symposium organized by the Microbiological Committee of the Polish Academy of Sciences and the Institute of Rural Occupational Medicine and Rural Hygiene of the Ministry of Health in Lublin, Poland 5th—8th December, 1958.* pp. 238. Warsaw: Polska Akademia Nauk. [In English.] [Zeszyty Problemowe Nauki Polskiej No. 19.] 2452

The main subjects discussed in this symposium of 33 papers by workers from 12 countries were the morphology and antigenic structure of leptospira, and the epidemiology, clinical aspects, treatment and prophylaxis of leptospirosis in man and animals; 22 of the papers are in English, 7 in French, and 4 in German. The 4 papers dealing with leptospirosis in domestic animals are on the pathogenesis of leptospiral abortion in cattle [see next abst.]; epidemiology and control; and the serology of leptospirosis in sheep in Hungary.—M.G.G.

Fennestad, K. L. & Borg-Petersen, C. (1960). *Pathogenesis of leptospiral bovine abortion.* In "Leptospirae and leptospirosis in man and animals". pp. 153-159. [Warsaw: Polska Akademia Nauk.] [In English.] 2453

The authors discussed different hypotheses on the pathogenesis of leptospiral abortion in cattle, and concluded that abortion is usually due to the death of the foetus from leptospirosis.—M.G.G.

Alston, J. M. (1961). *Recent developments in leptospirosis.* — Proc. R. Soc. Med. 54, 61-67. 2454

In his presidential address the author discussed the literature on leptospira and leptospirosis with special reference to growth on solid media, metabolism, serotypes, pathogenicity and diseases in domestic animals and man, treatment with antibiotics and prevention by hygienic measures and vaccination. Leptospirosis in cattle and dogs is world wide. Ovine infection is less common. Some authors have produced evidence on the association of leptospiral infections with periodic ophthalmia in horses. Human infection is predominantly the result of contact with urine from infected domestic or free-living mammals.—E.G.

Kita, E., Iwata, A. & Takamura, M. (1960). *Studies on bovine leptospirosis in Japan. IV. Bovine hemoglobinuria occurring in cattle in*

the northern part of Hyogo prefecture, and isolation of *Leptospira australis* A, from cattle. — Jap. J. vet. Sci. 22, 259-264. [In English. Summary in Japanese.] 2455

Bovine leptospirosis occurs from August to November in this area, chiefly in cattle over 3 years old. In 1955, haemoglobinuria, accompanied by jaundice, anaemia and anorexia, was observed in 30 of the total population of 7,063 cattle. Of 18 subjected to the agglutination-lysis test, 13 were positive for *L. autumnalis*, 2 for *L. hebdomadis*, 2 for *L. australis* A, and one for *L. icterohaemorrhagiae*. Five strains of *L. autumnalis* and one of *L. australis* A were isolated from the urine of 6 cattle. *Leptospira* was not isolated from the aborted foetuses of 6 cows.—M.G.G.

Roth, E. E., Adams, W. V. & Linder, D. (1961). *Isolation of Leptospira canicola from skunks in Louisiana.* — Publ. Hlth Rep., Wash. 76, 335-340. [Authors' summary modified.] 2456

L. canicola was isolated from five skunks (*Mephitis mephitis*) in Louisiana. All five strains were isolated by direct inoculation of solid medium with diluted kidney suspension. Four were obtained in pure culture by direct inoculation of five types of semi-solid medium with 10% kidney suspension. Employing the microscopic agglutination test and the agglutinin-absorption test, all five strains were shown to be homologous with *L. canicola*. The serum from one skunk also agglutinated antigens of the *hebdomadis* serogroup.

Maestrone, G. & Coffin, D. L. (1961). *Studio della leptospirosi sperimentale nell'uovo embrionato di pollo. [Experimental leptospira infection in chick embryos.]* — Arch. Vet. Ital. 12, 23-36. [Summaries in English, French and German.] 2457

By means of the fluorescent antibody technique it was possible to demonstrate leptospira in embryonated eggs from the start of infection and to study its pathogenesis with greater accuracy than that afforded by ordinary laboratory methods. Conditions which limit or nullify the efficiency of diagnostic procedures in common use, did not affect the technique which is, therefore, considered of value for diagnostic purposes.

—T.E.G.R.

Jansen, B. C. (1960). *I. The experimental reproduction of pulpy kidney disease. II. The occurrence of pulpy kidney in sheep dosed with phenothiazine.* — J. S. Afr. vet. med.

Ass. 31, 205-208 & 209-210. [Author's summaries modified.] 2458

I. The soluble fraction of commercial dextrin stimulated epsilon toxin production by *Cl. welchii* Type D to a greater extent than the same concentration of glucose. Fatal enterotoxaemia was produced in susceptible sheep by injection into the duodenum under local anaesthesia of 5 ml. of an actively growing culture of type D together with 20 ml. of a 40% solution of dextrin. Blood concentration of at least 0.15 Wellcome units of circulating epsilon antitoxin per ml. was sufficient to protect all sheep against the experimental reproduction of the disease.

II. Experiments showed that dosing sheep with phenothiazine in therapeutic doses can induce enterotoxaemia if the sheep harbour *Cl. welchii* Type D in their intestines. A circulating antitoxin level higher than 0.1 Wellcome unit per ml. was sufficient to prevent enterotoxaemia subsequent to dosing with phenothiazine.

Collee, J. G. (1961). **The nature and properties of the haemagglutinin of *Clostridium welchii*.** — J. Path. Bact. 81, 297-312. 2459

C. defined the properties of the *Cl. welchii* haemagglutinin, including its contested diffusible character, and tested the validity of Wickham's hypothesis [*V.B.* 26, 1559] concerning the relationship of the haemagglutinin to the enzyme that destroys blood group-A substance.—R.M.

Craig, J. P. & Miles, A. A. (1961). **Some properties of the iota-toxin of *Clostridium welchii*, including its action on capillary permeability.** — J. Path. Bact. 81, 481-493. [Abst. from authors' summary.] 2460

Crude and partially purified toxic preparations of *Cl. welchii* Type E contain, in addition to the alpha-toxin, a factor which, when injected i/d in moderate doses, increases the permeability of small cutaneous blood vessels in the g.pig. Slightly larger doses produce necrosis. Neutralization tests with antitoxic sera of known antibody content indicate that this permeability factor is the iota-toxin, identical with the iota-lethal factor in mice.

Batty, I. & Bullen, J. J. (1961). **The permeability of the sheep and rabbit intestinal wall to antitoxin present in the circulation.** — J. Path. Bact. 81, 447-458. [Authors' summary modified.] 2461

Antitoxin injected i/v into normal sheep and rabbits appeared in small but readily

estimated proportion in the intestinal contents. In sheep actively immunized against *Clostridium welchii* Type D, *Cl. welchii* epsilon-antitoxin is found in the duodenum and ileum in concentrations of up to 0.8% of the serum concentration.

The intestinal wall of sheep is only slightly more permeable to heterologous than to homologous antitoxin.

Šlesinger, L. (1961). **Chlórpromazín v liečbe tetanu u koní. [Chlorpromazine in the treatment of tetanus in horses.]** — Vet. Čas. 10, 187-195. [In Slovak.] 2462

I/m doses of 300-500 mg. of chlorpromazine had a muscle-relaxant effect on horses with tetanus, were well tolerated and produced no undesirable side effects, whereas i/v doses of 100-200 mg. resulted in over-excitement followed by somnolence.—E.G.

English, P. B. & Carlisle, C. H. (1961). **Tetanus in the dog.**—Aust. vet. J. 37, 62-65. [Authors' summary modified.] 2463

Tetanus in the dog is reviewed briefly. It is not uncommon in the Brisbane area of Queensland—21 cases have been seen by the writers. A case in which a dog recovered after being unable to stand for 8 days is presented; pentobarbitone sodium was used to achieve muscular relaxation.

Whenham, G. R., Carlson, H. C. & Aksel, A. (1961). **Avian vibronic hepatitis in Alberta.**—Canad. vet. J. 2, 3-7. [Summary in French. Authors' summary modified.] 2464

Examination of diseased fowls submitted for post-mortem examination revealed vibronic hepatitis in 11 of 131 birds. Observations on the pathology and bacteriology of the disease are presented.

✓ Galati, P. (1960). **Angiocolite catarrhale cronica da miceti nel suino. Ricerche isto-patologiche ed eziologiche su di un nuovo caso. [Chronic catarrhal cholangitis due to *Rhodotorula mucilaginosa* in a pig.]** — Acta med. vet., Napoli 6, 479-494. [Summaries in English and French.] 2465

A pig's liver showed chronic catarrhal cholangitis, necrosis in the gall bladder and in the lymph nodes (which were also atrophic). Blastospores were demonstrated microscopically and *Rhodotorula mucilaginosa* (to which the condition is ascribed) [see also *V.B.* 30, 2148] was isolated from the catarrhal fluid. Experimental infection in fowls, pigeons, rabbits and g.pigs was not achieved.

Factors which might account for the pathogenicity of the fungus (normally a saprophyte) are discussed.—T.E.G.R.

- ✓ Bermejo Lozano, J. (1960). Contribución al estudio de la moniliasis de las aves. [**Moniliasis in fowls.**]—Rev. Patronato Biol. anim., Madrid 6, 45-127. [Summaries in English and French.] 2466

An outbreak of *Candida albicans* infection in 3,000 chicks, the first reported in Spain, was caused by contaminated yeast extract in the ration; 60% died. The clinical picture and P.M. findings, and the action of the fungus on mice and chick embryos were described.

—M.G.G.

- ✓ McDonough, E. S., Ajello, L., Ausherman, R. J., Balows, A., McClellan, J. T. & Brinkman, S. (1961). **Human pathogenic fungi recovered from soil in an area endemic for North American blastomycosis.**—Amer. J. Hyg. 73, 75-83. 2467

In Kentucky, 842 samples of soil, wood, manure and other materials, collected from premises occupied by persons and dogs affected with blastomycosis, yielded 163 strains of *Microsporium gypseum*, 55 of *Keratinomyces ajelloi*, 46 of *Allescheria boydii*, 36 of *Histoplasma capsulatum*, 10 of *Cryptococcus neoformans*, 5 of *M. cookei*, and one of *Candida albicans*. In an addendum it is stated that *Blastomyces dermatitidis* was recovered from one of the soil samples; details will be published elsewhere.—M.G.G.

- Ditchfield, J. & Fischer, J. B. (1961). **North American blastomycosis in the dog; with a report of six Canadian cases.**—Canad. vet. J. 2, 103-111. [Summary in French. Authors' summary modified.] 2468

Five dogs had the disseminated disease and one the benign, primary skin form. Four dogs had signs of pneumonitis and two, skin lesions. One with skin lesions died with the disseminated form of the disease shortly after surgery. North American blastomycosis in the dog, as in man, appears to be most commonly encountered as a systemic infection and most skin lesions represent part of this systemic process. *Blastomyces dermatitidis* can be recovered fairly easily from biopsy specimens and most body discharges. The final diagnosis must rest on culture of the organism since the histological picture may be confused with histoplasmosis.

- ✓ Denton, J. F., McDonough, E. S., Ajello, L. & Ausherman, R. J. (1961). **Isolation of *Blastomyces dermatitidis* from soil.**—Science 133, 1126-1127. [Authors' abst. modified.] 2469

By intravenous inoculation of soil suspensions into the tail vein of mice, the fungus was recovered from a soil sample collected in a barn that had sheltered a dog that died of blastomycosis 2 years previously.

- ✓ Kaplan, W., Ajello, L., Di Bitetto, D. B. & McDonough, E. S. (1961). **The discovery of *Histoplasma capsulatum* in Connecticut soil incidental to the investigation of a case of feline cryptococcosis.**—Mycopathologia 14, 1-8. [In English.] 2470

C. neoformans infection in a five-year-old cat is described. During the unsuccessful search for a possible source of infection, *H. capsulatum* was isolated from soil. An attempt to use the fluorescent antibody technique with fluorescein labelled anti-*H. capsulatum* globulin for the rapid detection of *H. capsulatum* in soil samples proved successful, round or ovoid elements resembling the microconidia of *H. capsulatum* being observed in all positive soil smears.

—A. ACKROYD.

- Wright, M. L., Anderson, G. W. & Epps, N. A. (1960). **Hatchery sanitation as a control measure for aspergillosis in fowl.**—Avian Diseases 4, 369-379. [Authors' conclusions modified.] 2471

Under experimental conditions, penetration of sound and cracked eggs by *Aspergillus fumigatus* occurred in the incubator and transmission occurred during hatching. To minimize losses more effective sanitation of commercial hatcheries is recommended.

- Knight, G. J. (1960). **Studies with avianised strains of the organism of contagious bovine pleuropneumonia. IX. The titration of vaccines in cattle.**—Bull. epiz. Dis. Afr. 8, 295-304. [Summary in French. Author's summary.] 2472

Two approximate methods for estimating the vaccine dose just sufficient to immunise 50% of a cattle population are described. The exact method of probit analysis is also outlined for use when the estimation of other percentage points is also required. The methods chosen and their presentation are such as to allow their complementary use.

- Turner, A. W. & Trethewie, E. R. (1961). **Preventive tail-tip inoculation of calves against bovine contagious pleuropneumonia.**

I. Influence of age at inoculation upon tail reactions, serological responses, and the incidence of swollen joints.—Aust. vet. J. 37, 1-8. 2473

Trethewie, E. R. & Turner, A. W. (1961). Preventive tail-tip inoculation of calves against bovine contagious pleuropneumonia. **II. Vegetative endocarditis (valvulitis) and myocarditis as sequelae to post-inoculation arthritis.**—Ibid. 27-36. [Authors' summaries modified.] 2474

I. Calves of various age groups (7 days, 20-30 days, 40-50 days, and 144-253 days) were inoculated with "C.S.I.R.O. Laboratory Culture Vaccine", that is 4-day liquid culture of the "V5" strain of *M. mycoides*, then at its twentieth passage since isolation in 1936. Tail-tip swellings of various degrees occurred in 20 out of 30 adults, but were extremely rare in calves, being often very mild and not easy to detect. Relatively readily detectable swellings occurred only in 5 instances out of 196 calves inoculated when aged from 7-253 days. Specifically infected swollen limb joints developed in calves inoculated at ages up to 50 days; they appeared from 7 to 239 days after inoculation, 24% occurring between 11 and 20 days, 45% between 21-30 days, and 21% between 31-60 days after inoculation. Their incidence in the 7 days old group was 40%, in the 20-30 days old group 27%, and in the 40-50 days old group 7%, soon after which age susceptibility appeared to cease. The lesion is a non-purulent sero-fibrinous poly-arthritis and teno-synovitis, usually terminating in spontaneous bacteriological cure, with residual fibrosis. In the groups of calves inoculated when aged 7 days or 20-30 days, positive complement-fixation reactivity (CFR) was almost wholly restricted to calves with swollen joints; in the older groups and in adults, positive CFR occurred in most of those in which tail swellings occurred and in about one-fifth of those without detectable tail reactions.

II. Calves of various age groups were inoculated subcutaneously at the tail tip, or intravenously in an ear vein, with the causal organism of bovine contagious pleuropneumonia, *Mycoplasma mycoides*. Specifically infected swollen limb joints occurred, mostly 3-4 weeks later, in 28% of calves inoculated when 6-50 days old.

The joint infections eventually underwent spontaneous cure, apart from residual fibrosis, but vegetative endocarditis on atrio-ventricular and aortic semilunar heart valves occurred,

typically as a delayed phenomenon, in 28% of calves which had developed joint infection. This appears to be the first record of a joint-heart syndrome due to a *Mycoplasma* species. The condition is classified as myocarditis and subacute bacterial (*Mycoplasma mycoides*) endocarditis, secondary to sero-fibrinous poly-arthritis and teno-synovitis.

Plackett, P. (1961). A polyglycerophosphate compound from *Mycoplasma mycoides*. — Nature, Lond. 189, 125-126. 2475

Incorporation of glycerol, labelled with radiocarbon, by cultures of the organism of contagious bovine pleuropneumonia was studied. Of five compounds obtained from harvested cultures, one was a polyglycerophosphate.—R.M.

Tourtellotte, M. E. & Jacobs, R. E. (1960). Physiological and serologic comparisons of PPLO from various sources. — Ann. N. Y. Acad. Sci. 79, 521-530. Discussion: pp. 551-530. 2476

The 15 PPLO strains studied could be divided into 2 major groups based on their ability to utilize carbohydrates. All except 4 strains produced acid from carbohydrates; metabolically, the fermentative strains resembled *Mycoplasma mycoides* and *Streptococcus faecalis*. Among the 15 strains, 10 serological types were distinguished.—E.V.L.

Olesiuk, O. M. & van Roekel, H. (1960). Transmission of chronic respiratory disease in chickens. — Avian Diseases 4, 348-368. [Authors' summary modified.] 2477

Negative results were obtained from the limited trials conducted on incubator and brooder transmission of CRD. Transmission by cohabitation was demonstrated in sexually mature chickens.

Egg transmission may be more common in flocks recently infected than in flocks in which the disease has become stabilized. Pathogenic PPLO were recovered more easily from recently-infected flocks than from flocks manifesting few or no clinical signs and having a long history of positive serological tests. A serologically-positive flock should be considered as a potential source of CRD for its progeny.

Infection may spread within a flock with slight or no clinical manifestations. In most flocks, clinical signs are usually evident and the entire flock becomes serologically positive. In flocks in which infection is static (as

evidenced by serological findings), removal of reactors may eliminate infection. Serologically-positive birds should not be introduced into negative flocks nor should serologically-negative birds be introduced into positive flocks.

Blanco Loizelier, A. (1960). Aislamiento e identificación del *Mycoplasma gallinarum* en unos focos de enfermedad respiratoria crónica. [Isolation and identification of *Mycoplasma gallinarum* in outbreaks of chronic respiratory disease.] — Rev. Patronato Biol. anim., Madrid 6, 5-34. [Summaries in English and French.] 2478

M. gallinarum was isolated from tracheal and air sac exudates and lung lesions in 11 outbreaks of chronic respiratory disease in fowls. The organism was isolated and passaged in chick embryos and PPLO Difco media enriched with horse, pig or fowl serum. Cultural, biochemical, haemagglutinating and serological properties of most of the strains were similar to those of type S₆. Agglutinating and haemagglutination-inhibiting antibodies were demonstrated in infected fowls.

—M.G.G.

Chalquest, R. R. & Fabricant, J. (1960). Pleuropneumonia-like organisms associated with synovitis in fowls. — Avian Diseases 4, 515-539. 2479

Seven isolates from fowls and turkeys with infectious synovitis were grown in PPLO agar or PPLO broth containing 0.1% beta-diphosphopyridine nucleotide, 10% pig serum inactivated by heat, thallium acetate and penicillin; the broth also contained 0.1% cysteine but not crystal violet. The colonies were typical PPLO colonies, morphologically similar to S₆ type but serologically distinct. Synovitis was reproduced in chicks and poults with a cultured strain originally isolated from turkeys.—M.G.G.

Beasley, J. N., Moore, R. W. & Watkins, J. R. (1961). The histopathologic characteristics of diseases producing inflammation of the air sacs in turkeys — a comparative study of pleuropneumonia-like organisms and ornithosis in pure and mixed infections.—Amer. J. vet. Res. 22, 85-92. 2480

In turkeys, many of the lesions in the respiratory system due to psittacosis resemble

those of infectious sinusitis caused by pleuropneumonia-like organisms (PPLO). The histopathological features in both pure and mixed infections are described. Except for an increased amount of lymphoid tissue in the parenchymatous organs, lesions caused by PPLO were limited to the respiratory system whilst the psittacosis agent produced in addition to respiratory lesions, pericarditis, myocarditis, hepatitis, splenitis and, in sexually mature birds, orchitis. Pneumonia with numerous lymphocytic foci occurred in PPLO infections whilst an epithelial pneumonitis was present in psittacosis infection; respiratory lesions were otherwise largely similar. Combined infections produced more severe and extensive lesions which showed the characteristics of both diseases. Elementary bodies were observed only in the testicles of 3 adult birds infected with psittacosis and in the tissues of 2 poults dying of psittacosis and PPLO-psittacosis infections.—A. ACKROYD.

Walker, D. J. (1961). Isolation and characterization of a hemicellulose-fermenting bacterium from the sheep rumen. — Aust. J. agric. Res. 12, 171-175. [Author's summary modified.] 2481

A strictly anaerobic, Gram-negative, rod-like organism was isolated from sheep rumen liquor by culture in hemicellulose medium. The organism fermented several carbohydrates, including hemicellulose, producing acetic and lactic acids as the main end-products. Some biochemical characteristics of the organism are described and its taxonomic placement is discussed: it is possibly a new species of the genus *Bacteroides*.

Bladen, H. A., Bryant, M. P. & Doetsch, R. N. (1961). A study of bacterial species from the rumen which produce ammonia from protein hydrolyzate. — Appl. Microbiol. 9, 175-180. [Authors' summary.] 2482

Bacteroides rumenicola is usually the most important ammonia-producing bacterium in the rumen of mature cattle. Other species of probable significance include *Selenomonas ruminantium*, *Peptostreptococcus elsdenii*, and some strains of the genus *Butyrivibrio*. Many ammonia-producing species are among the predominant bacteria of young calves.

DISEASES CAUSED BY PROTOZOAN PARASITES

Anon. (1960). East African High Commission. East African Trypanosomiasis Research Organization, Report January — December 1959. pp. 64. Nairobi: Govt. Printer. Sh. 5. 2483

This report covers a period when there was considerable reorganisation and re-planning in the East African Trypanosomiasis Organization after the closure of the laboratories at Tinde and Shinyanga and the concentration of work at Tororo. In the protozoology section a collection of strains of trypanosomes is being built up. These are derived mainly from cattle in the Busoga fly belt of Uganda on the north-east shore of Lake Victoria and are chiefly *T. congolense*, *T. vivax* and *T. brucei* groups, mainly in mixed infections. The Entomology section has been developing special techniques for handling *Glossina* in the laboratory. Methods for feeding flies singly on mice and for membrane feeding have been developed. Field studies include assessments of trapping methods and observations on the behaviour of *G. swynnertoni* and *G. morsitans*, studies on the activity of wild game and a description of the vegetation of the Lugala area. Attempts to isolate trypanosomes from *G. palpalis* resulted in the recovery of a strain of *T. brucei* type which is infective for man (*T. rhodesiense*). Biochemical studies were made on the determination of protein in cerebro-spinal fluid and the metabolism of nitrofurazone in man and rat. Some of the chemotherapeutic studies were concerned with the toxicity and therapeutic activity of nitrofurazone for the treatment of trypanosomiasis in man.

—L. P. JOYNER.

Trumić, P. & Lolin, M. (1960). [Role of thrombocytes in *Trypanosoma equiperdum* infection.] — Acta vet., Belgrade 10, No. 4 pp. 37-48. [In Serbian. Summary in German.] 2484

Thrombocytosis was not observed in rabbits, g.pigs and rats inoculated s/c with suspensions of dead *Trypanosoma equiperdum*, but occurred when live trypanosomes were used. The role of thrombocytes in freeing the organism from live trypanosomes was discussed. In splenectomized animals production of thrombocytes was apparently taken over by the bone marrow.—E.G.

Pautrizel, R., Ripert, C. & Duret, J. (1960). Résistance du fœtus de rongeur (rat, cobaye, lapin) vis à vis de *Trypanosoma equiperdum*.

[Resistance of foetuses of rat, guinea-pig and rabbit to *T. equiperdum*.] — Ann. Parasit. hum. comp. 35, 469-487. 2485

T. equiperdum was injected *in utero* into embryos of pregnant rats, g.pigs and rabbits, the usual dose being 1,000 organisms per embryo. All the inoculated rat embryos delivered by caesarian section 10-78 hours later were positive, as were 2 stillborn rats and one rat born alive. All the g.pig embryos were aborted; those from 5 out of 12 females were positive. In 12 rabbits in which the inoculated foetuses were recovered after caesarian section or birth, all were positive except one stillborn rabbit which had been given only 100 trypanosomes on the 23rd day of gestation. Untreated foetuses remained free from trypanosomes, although these were present in the maternal blood.—M.G.G.

Herbert, I. V. & Becker, E. R. (1961). Effect of cortisone and X-irradiation on the course of *Trypanosoma lewisi* infection in the rat.— J. Parasit. 47, 304-308. 2486

S/c doses of cortisone in rats infected with *T. lewisi* did not depress the formation and maintenance of antibody. Neither cortisone nor a lethal dose of X-rays destroyed immunity to *T. lewisi* in recovered rats.—M.G.G.

Solana Alonso, A. (1960). Conservación del *Trichomonas foetus* por congelación. [Preservation of *Trichomonas foetus* by freezing.] — Rev. Patronato Biol. anim., Madrid 6, 35-43. 2487

Cultures of *Tr. foetus* frozen at -79°C. in 5% glycerine remained viable for at least 170 days.—M.G.G.

Frost, J. K., Honigberg, B. M. & McLure, M. T. (1961). Intracellular *Trichomonas vaginalis* and *Trichomonas gallinae* in natural and experimental infections.—J. Parasit. 47, 302-303. 2488

Histological examination of abscesses produced in mice by s/c inj. of axenic cultures of *Tr. gallinae* revealed apparently healthy parasites within macrophages in oedematous tissue. Epithelial cells in liver sections from an experimentally infected pigeon also contained trichomonads. There did not appear to be any previous record of the parasites within cells of mice or birds.

Tr. vaginalis was seen within macrophages near the abscesses that followed s/c inj. into mice.—R.M.

Horton-Smith, C., Beattie, J. & Long, P. L. (1961). **Resistance to *Eimeria tenella* and its transference from one caecum to the other in individual fowls.**—*Immunology* 4, 111-121. [Authors' summary modified.] 2489

Infections were produced in patent caeca by administering oocysts of *E. tenella* by mouth to fowls in which one caecum was ligated. Twenty-one days later, sporozoites were inoculated into both caeca and it was found that a resistance to infection had been acquired by the previously uninfected ligated caecum. The observations indicate that resistance to caecal coccidiosis develops in areas not previously exposed to parasitism by *E. tenella*. It is suggested that the immunity acquired by the ligated caecum is mediated through the circulation either by humoral antibodies or by lymphoid cells, or by a combination of both.

Kogan, Z. M. (1960). [Effect of sulphonamides fed to chicks on the sporulation of oocysts of *Eimeria necatrix*.]—*Zool. Zh.* 39, 978-983. [In Russian. Summary in English.] 2490

Excretion of *E. necatrix* oocysts decreased sharply in chicks given a single dose of 0.5 g. of sulphathiazole or 0.46 g. of phthalylsulphathiazole daily for 5 days. There was also a considerable decrease in the percentage of oocysts able to sporulate. Degenerative changes were seen in up to 95% of oocysts from treated chicks.—M.G.G.

Callow, L. L. & Hoyte, H. M. D. (1961). **The separation of *Babesia bigemina* from *Babesia argentina* and *Theileria mutans*.**—*Aust. vet. J.* 37, 66-70. [Authors' summary modified.] 2491

This paper describes the origins of 3 strains of *Babesia bigemina*. Experiments were carried out with 2 of these to separate them from contaminating organisms. The method used was passage through 5 calves. The first calf was inoculated with blood containing several different organisms, and subsequent subinoculations were done soon after blood smears were positive for *B. bigemina*. In one experiment the 5 passages were carried out in 8 days, and *Th. mutans* was eliminated after, at the most, 3 passages. In a second experiment, in which 5 passages were carried out in 10 days, *B. argentina* was eliminated after, at the most, 4 passages. A pure strain of *B. bigemina* was obtained in one of the 2 calves used for the fifth passage but the other developed a *Th. mutans* infection.

Mahoney, D. F. & Saal, J. R. (1961). **Bovine babesiosis: thick blood films for the detection of parasitaemia.**—*Aust. vet. J.* 37, 44-47. [Authors' summary.] 2492

For epidemiological studies on bovine babesiosis a reliable and practical method of detecting *Babesia bigemina* and *B. argentina* in blood films is required. Thick blood films, specially stained, are suitable and much better than thin films. The preparation and staining of thick blood films is described.

Barnett, S. F. (1960). **Connective tissue reactions in acute fatal East Coast fever (*Theileria parva*) of cattle.**—*J. infect. Dis.* 107, 253-282. 2493

A very detailed histological study was made of the lymph nodes, spleen, myeloid tissue, liver, kidney and blood during acute fatal infections with *Th. parva* in cattle. Normal tissues were used for comparison. In addition to biopsies, 6 normal cattle and 19 cattle, infected from several to 21 days, were killed and smears were made from blood and tissues. Especial attention was directed to the findings in the lymph nodes draining the site of infection. These are illustrated in 16 photographs and 6 drawings.—E.V.L.

Koestner, A. & Cole, C. R. (1961). **Neuropathology of ovine and bovine toxoplasmosis.**—*Amer. J. vet. Res.* 22, 53-66. [Authors' summary modified.] 2494

Neuropathological studies on 20 sheep and 17 cattle, all (except for 4 natural cases in cattle) experimentally infected with virulent *Toxoplasma gondii*, are reported. Characteristic lesions of toxoplasmosis were found in the central nervous system of 15 sheep and 8 cattle. These were focal necrosis and vascular damage (acute infection), and glial nodules, repair, and vascular mineralization (chronic disease). Diagnostic criteria of cerebral toxoplasmosis of sheep and cattle are presented and discussed.

Smith, I. D. (1961). **Ovine toxoplasmosis as a cause of reproductive wastage: preliminary observations.**—*Aust. vet. J.* 37, 18-21. [Author's summary modified.] 2495

Ewes were experimentally infected when 101-122 days pregnant by i/p inoculation with undiluted peritoneal exudate from infected mice. In one ewe, examined P.M. 16 days later, twin foetuses which were partially resorbed were still distinguishable. In 2 other ewes examined 30 and 40 days after inoculation no foetus or foetal membranes remained

obvious; this and other findings were taken as presumptive evidence of resorption.

Smith, I. D. (1961). **Ovine foetal resorption caused by *Toxoplasma gondii* infection.**—*Nature*, Lond. 189, 939. 2496

Results from a flock in Queensland, in which perinatal mortality due to toxoplasmosis had been diagnosed, showed a discrepancy between the number of ewes apparently conceiving and those eventually lambing. This difference being only partly accounted for by abortions suggested that foetal resorption might be more important than perinatal mortality in ovine toxoplasmosis.—E.V.L.

Hulland, T. J. & Tobe, S. B. (1961). **Toxoplasmosis as a cause of abortion in Ontario sheep.**—*Canad. vet. J.* 2, 45-51. [Summary in French. Authors' summary modified.] 2497

An outbreak of toxoplasma abortion in sheep was confirmed by histological, serological and animal inoculation procedures.

Vallée, A., Groulade, P., Levaditi, J. C., Desmonts, G. & Virat, J. (1961). Contribution à l'étude de la toxoplasmose expérimentale du chien. [Experimental toxoplasma infection in dogs.]—*Bull. Acad. vét. Fr.* 34, 43-52. 2498

Fatal toxoplasmosis developed in 4 puppies aged 2-3 months infected i/p or intratracheally. Three older dogs infected i/p or i/v had fever and reduced appetite, or remained free from symptoms. Toxoplasma was not found in smears and sections of the organs of dogs infected by the oral route, but dye test antibodies were detected. Lesions consisted essentially of necrotic foci resembling those in the natural disease. Leucopenia and neutrophilia were observed in the first 2 or 3 weeks of infection. The sedimentation rate increased as the disease progressed. Dye test titres reflected the evolution of the infection. —M.G.G.

Dallenbach, F. & Piekarski, G. (1960). Über den Nachweis von *Toxoplasma gondii* im Gewebe mit Hilfe markierter fluoreszierender Antikörper (Methode nach Coons). [The fluorescein-labelled antibody technique for demonstrating *T. gondii* in tissues.] —

Virchows Arch. 333, 607-618. [Summary in English.] 2499

Toxoplasma was demonstrated in spleen, lymph node and liver of experimentally infected mice and g.pigs by using the fluorescent antibody technique.—E.G.

Gološin, R. V. (1960). [Spontaneous and experimental toxoplasmosis in rodents.] — *Acta vet.*, Belgrade 10, No. 4, pp. 139-150. [In Serbian. Summary in German.] 2500

By inoculating sousliks (*Citellus citellus*) i/p with organ suspensions from 126 rats, caught in the Vojvodina region, G. isolated three strains of *Toxoplasma gondii*. The strains produced acute toxoplasmosis in sousliks but were less pathogenic for mice. Because of their high susceptibility, sousliks were stated to be ideally suitable for toxoplasmosis research.—E.G.

Bemrick, W. J. (1961). **A note on the incidence of three species of *Giardia* in Minnesota.**—*J. Parasit.* 47, 87-89. [Author's summary modified.] 2501

Examination of faeces from dogs in Minnesota indicated that 7.66% of 2,063 samples were positive for *Giardia canis*. In cats, 3% of 291 faecal samples were positive for *G. cati*.

14% of wild *Mus musculus* caught inside buildings, were positive for *Giardia muris*. About half of the mice in a laboratory colony were infected.

Akiba, K. (1960). **Studies on the leucocytozoon found in the chicken, in Japan. II. On the transmission of *L. caulleryi* by *Culicoides arakawae*.**—*Jap. J. vet. Sci.* 22, 309-317. [In English. Summary in Japanese.] 2502

Zygotes, ookinetes, oocysts and sporozoites of *L. caulleryi* were observed in *C. arakawae* that had fed on infected chickens. Susceptible chickens were infected by injecting a suspension of *C. arakawae* mosquitoes that had fed on infected chickens 2-7 days previously. Living *Dermanyssus gallinae* did not transmit the organism, and suspensions of *Culex pipiens pallens* that had fed on infected chickens did not transmit *L. caulleryi* but transmitted a plasmodium, possibly *Pl. juxtannucleare*.—M.G.G.

See also abst. 2785 (report, Norway).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Cooper, P. D. (1961). **A chemical basis for the classification of animal viruses.**—*Nature*,

Lond. 190, [No. 4773.] 302-305. 2503
A satisfactory taxonomic system for the

viruses would be welcome as none of the earlier classifications which have been proposed have proved very suitable.

The system here proposed by Cooper is based on type of nucleic acid and essential labile lipid content and it is claimed that it is less arbitrary, genetically more stable than previous systems and may provide a useful means of ordering the many new viruses now coming to light.

The characteristics which are used in classifying a virus by this system are (a) type of nucleic acid (b) sensitivity to ether or detergents (c) size and (d) serological relationships. Using these criteria Cooper prepared the following table.

A CLASSIFICATION SCHEME FOR ANIMAL VIRUSES BASED ON NUCLEIC ACID CONTENT, SENSITIVITY TO ETHER OR DETERGENTS, SIZE AND SEROLOGICAL RELATIONSHIPS

| | | Diameter (mμ) |
|-----------------------------|--------------------------------|------------------------------|
| ANIMAL VIRUS | POX-virus | |
| | Ether sensitive | —Myxoma |
| | Ether sensitive | —Fibroma |
| | Ether resistant | —Animal pox* (vacinia, etc.) |
| | Ether resistant | —Avian pox* (fowlpox, etc.) |
| | Lipovirus (ether sensitive) | —Herpesvirus |
| | Simplex | |
| | B | |
| | pseudorabies | |
| | Smaller deoxyvirus | —Measles ? |
| DEOXYVIRUS (DNA-containing) | | —Rinderpest ? |
| | | —Canine distemper ? |
| | | —Adenovirus* |
| | | —Rabbit papilloma |
| | | —SE polyoma |
| | Clathrovirus (ether resistant) | |
| | | |
| | | |
| | | |
| | | |
| RIBOVIRUS (RNA-containing) | | |
| | | |
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* Serological group. Data on vesicular exanthema from Shaffer and McClain (personal communication)

Vuillaume, R. (1961). La fièvre aphteuse en France au cours de l'année 1960. [Foot and mouth disease in France during 1960.]—Rec. Méd. vét. 137, 199-209. [Summaries in English and Spanish.] 2504

As a result of new regulations requiring the immunization of all cattle over 6 months of age that are transported outside their district of origin, about 10 million cattle were vaccinated against F. & M. disease in France in 1960. The stamping-out method, which has been used successfully for 3 years in Finistère, was enforced in 18 departments in eastern

France in August 1960, with the result that, in the last 4 months of that year, 4,195 animals were compulsorily slaughtered in 165 outbreaks. During 1960, 1.55 million N.F. was paid to farmers in compensation for slaughtered animals, and 7.5 million N.F. towards the cost of vaccination. There were 7,381 outbreaks of the disease in 1960, compared with 6,198 in 1959. Of 114 virus strains examined, 100 were of type A, 9 of type C, and 5 of type O. Extensive vaccination is recommended in the Massif Central and Vendée regions, which still have a high incidence of the disease.—M.G.G.

Pledger, R. A. (1961). Formation and release of foot-and-mouth disease virus from bovine calf kidney cell cultures.—Virology 13, 365-367. 2505

Cultures of calf kidney cells incubated at 37°C. were inoculated with F. & M. disease virus at a low multiplicity of infection (0.00014). Intracellular and extracellular progeny were both detected 150 min. later, but extrapolation of the curve of the formation of intracellular virus indicated that the first progeny were formed at 110 min. The rate of intracellular formation decreased at about 160 min. and the rate of extracellular release decreased at about 180 min.—M.G.G.

Fedida, M. (1961). Les anticorps précipitants du sérum de bovins vaccinés contre la fièvre aphteuse. Étude, par la méthode d'Ouchterlony, de leurs rapports avec le degré d'immunité. [Gel diffusion test for serum antibodies in cattle immunized against foot and mouth disease.]—Rev. Immunol. 25, 46-63. 2506

Cattle immunized against F. & M. disease usually became positive to the gel diffusion test after 6-11 days. The reactions intensified during the following 3-14 days. The strength of the reaction was correlated with the protection index. Only one of 72 immunized cattle that became positive to the test developed secondary lesions on challenge, but of 84 that remained negative after immunization, 60 were susceptible. The precipitation lines of serum from immune cattle did not alter after challenge, and immune cattle that were negative to the test usually remained negative after challenge. Susceptible cattle, however, became positive from the 5th day after challenge.—M.G.G.

Loddo, B. & Medda, A. (1961). Sviluppo del virus aftoso "O₅₈" in culture di cellule renali

trypsinizzate di coniglio adulto. [**Growth of foot and mouth disease virus Type O₅₈ on trypsinized kidney cells of adult rabbits.**]—Vet. ital. 12, 22-25. [Summaries in English, French and German.] 2507

A field strain of virus (Type O₅₈) was isolated and passaged serially in cultures of rabbit kidney cells.—T.E.G.R.

Lübke, A. (1960). Ultramikroskopische Befunde bei Frühstadien der durch das Maul- und Klauenseuche-Virus verursachten Myokarditis. [**Electron microscopy of early myocarditis lesions in mice infected with foot and mouth disease virus.**]—Virchows Arch. 333, 487-496. [Summary in English.] 2508

Heart lesions in mice were examined electron-microscopically on the first and second days after infection with the virus. The first day there was oedema of muscle fibres and mild fatty degeneration, the second day lesions were more severe and consisted of coagulative necrosis, massive oedema, and lysis of mitochondria and myofibrils. Intracellular oedema appeared to be a primary, characteristic, pathogenic lesion.—E.G.

Bartha, A. (1961). Kísérletek az Aujeszky-féle vírus virulenciájának szelídítésére. [**Experimental reduction of virulence of Aujeszky's disease virus.**]—Mag. állator. Lapja 16, 42-45. [In Hungarian. Summaries in English and Russian.] 2509

B. selected an attenuated variant by passage on monolayers of chick embryo and monkey kidney cells. The technique is described in detail. The variant appeared in considerably smaller plaques than did the parent strain, and caused individual rounding off and separation of the cells in contrast to the parent strain, which causes syncytium formation. In sheep and rabbits it proved to be of considerably decreased virulence, while capable of producing immunity against the parent strain of the virus. These characteristics were constantly present through 70 passages. The variant is stable in contrast to Tokumaru's "L" strain [*V.B.* 28, 411], which had a similar cytopathic effect to that of the new variant only temporarily, and was in the view of the authors the result of the use of alkaline pH by Tokumaru for the propagation of his tissue cultures.

On the basis of the results of the animal experiments, not yet concluded, it is expected that a living avirulent vaccine against Aujeszky's disease may be produced from the new virus variant.—A. SEBESTENY.

Bogdán, E. (1961). Adatok a nagyüzemben tartott juhok Aujeszky-féle járványának leküzdéséről. [**Control of Aujeszky's disease in sheep.**]—Mag. állator. Lapja 16, 72. [In Hungarian.] 2510

The author described the history and the control of an outbreak of Aujeszky's disease in a large flock of ewes in Hungary. He expressed the view that the disease is mainly spread by the urine and emphasizes the importance of individual isolation of the animals of the entire flock to control outbreaks. He put forward three practical suggestions for minimizing spread of the disease in affected flocks.—A. SEBESTENY.

Berecz, L. (1961). Aujeszky-féle betegség juhok között, és a járvány megállítása. [**Aujeszky's disease in sheep.**]—Mag. állator. Lapja 16, 73. [In Hungarian.] 2511

An outbreak of Aujeszky's disease in 378 rams is described. Details of the clinical symptoms, P.M. findings and the special measures taken to control the outbreak by achieving individual isolation of the animals, are given. A special method of tying up the animals individually obviated the danger of the rams entangling themselves in the ropes.

—A. SEBESTENY.

Ercegovac, D. (1960). [**Production and evaluation of vaccine against Aujeszky's disease.**]—Acta vet., Belgrade 10, No. 4 pp. 27-35. [In Serbian. Summary in German.] 2512

A live aluminium hydroxide adsorbed Aujeszky's disease vaccine, prepared from a 30% brain suspension in saline was as safe for pregnant sows and piglets as a similar, but inactivated vaccine. The protective power of the live vaccine was superior to that of the killed vaccine.—E.G.

Janowska, I. (1960). Attempts to adapt fixed rabies virus to chick embryos. Preliminary report. —Biul. Inst. Wet. Puławy 4, 42-44. [In English.] 2513

Fixed rabies virus adapted to sheep brain that underwent 10 intracerebral passages in day-old chicks, did not survive more than 6 passages in 6-day-old chick embryos. Without previous passage in chicks only one passage in chick embryos was achieved.—M.G.G.

I. Yoshino, K., Kondo, A., Kuma, N. & Taniguchi, H. (1961). Infection of the one-day old fertile hen's egg with rabies virus. VI.

Strain differences in the egg adaptability.—

Arch. ges. Virusforsch. 10, 684-697. 2514

- II. Yoshino, K., Suzuki, M. & Kondo, A. (1961). Infection of the one-day old fertile hen's egg with rabies virus. VII. Comparison of viral yields obtained by inoculation of eggs of different ages with different strains and production of vaccine.—Ibid. 698-711. [In English.] 2515

I. Mouse-fixed strains of rabies virus were generally more infective for eggs than rabbit-fixed strains. The virus yield, in eggs, of mouse-fixed Takamen strain remained constant, whereas that of rabbit-fixed Nishigahara strain gradually increased. The maximum virus yield of Nishigahara strain was higher than that of Takamen strain because the lethal action of Takamen strain developed more rapidly. CVS strain retained its high infectivity for eggs after 25 serial passages in rabbit brain, but MDH strain did not acquire infectivity for eggs after 20 serial passages in mouse brain. Of 3 street strains, one had high infectivity for eggs while the other 2 had little or none.

II. Eggs inoculated on the 1st day of incubation with different strains of rabies virus consistently gave higher yields of virus than eggs inoculated on the 3rd or 5th days. Highest yields were obtained with moderately egg-adapted Nishigahara strain because the size of the harvested embryos was larger than with highly adapted Nishigahara strain and because virus concentrations were higher than could be obtained with Takamen and HEP Flury strains. The properties of the moderately egg-adapted strain could be maintained by passage in mouse brain. Vaccine prepared with this strain by exposure to ultra-violet light was over 7 times more potent than the U.S. reference vaccine. [See also *V.B.* 29, 2797-2799.]—M.G.G.

- Ichihara, Ts., Ichihara, T., Kitahara, Y., Watanabe, S., Taneno, H. & Muto, R. (1961). [Preparation of prophylactics for rabies. I. Vaccine inactivated by ultra-violet irradiation.]—J. Jap. vet. med. Ass. 14, 51-54. [In Japanese. Summary in English.] 2516

The protective capacity of a rabies vaccine, inactivated by exposure to ultra-violet irradiation was superior to that of vaccines inactivated by phenol, sodium ethyl mercurithiosalicylate or formalin, or attenuated with glycerine. Its immunogenicity was unimpaired after storage for 6 months at 2° to

5°C. After 12 months' storage it was only slightly less effective.—E.G.

- Thiéry, G. (1960). Histopathologie de la rage chez diverses espèces animales de l'ouest africain. Incidences cliniques et pathogéniques. [Histopathology of rabies in various species of West African mammals.]—Rev. Elev. 13, 259-279. [Summaries in English and Spanish.] 2517

A comparative study was made of the histopathology of rabies in naturally or experimentally infected animals (dog, jackal, cat, horse, ox, goat, pig, rabbit, g.pig, various kinds of rats and mice, and hedgehog). The study was based on natural infection in the dog, cat and jackal; in the other species street virus infection was achieved by s/c or i/m inoculation of virulent saliva and fixed virus infection by intracerebral or sub-occipital inoculation (in large animals) of a suspension of cerebral cortex. In all species inflammatory phenomena were more intense and involvement of the sympathetic nervous system was less with fixed than with street virus. With street virus, the number of Negri bodies was in inverse ratio to the degree of inflammation. It is considered that route of inoculation, virulence of the virus, time of year, age and species of the animals play a role in the inflammatory process in nerve tissue. The relationship between lesions and symptoms is discussed. Other aspects studied were: route followed by the virus in the body, difference in behaviour between fixed and street virus, and the problem of latent rabies.—T.E.G.R.

- Thiéry, G. (1961). Nature de la résistance naturelle à la rage. [Natural resistance to rabies: studies on dogs recovered from distemper.]—Bull. Acad. vét. Fr. 34, 77-81. 2518

Refractoriness to moderate doses of street rabies virus by the s/c or i/m route has been observed in dogs that have recovered from distemper. Histological examination of such dogs revealed sclerosis and polymerization of the ground substance of the ganglia. A 2-year-old Alsatian that remained normal for 1½ months after suboccipital injection of street rabies virus was killed. Rabies virus was isolated from the encephalon. This and the spinal cord showed pronounced perivascularitis, and Negri bodies were seen in the hippocampus. But all the ganglia were normal, and the membranes of the neurones were particularly thick. It was concluded that

penetration of neurones by rabies virus depends on the nature of the surrounding ground substance. Stress, leading to the secretion of corticosteroids, would depolymerize the collagen membrane and render it permeable to rabies virus.—M.G.G.

Wakeem, A. A. (1960). **Some observations on an outbreak of sheep pox at Shambat.**—Sudan J. vet. Sci. anim. Husb. 1, 74-76. 2519

An isolated outbreak of severe sheep pox is described in the Khartoum University flock of desert sheep which are reared in isolation on an intensive system. Skin lesions were of two types, numerous large hard nodules in the hairy areas and millet sized lesions in the hairless areas which passed through the usual stages of pock lesions. Three of the 10 affected sheep died. If intensive animal husbandry is introduced into the Sudan, immunization against sheep pox will have to be practised.—A. ACKROYD.

Sabban, M. S. (1960). **Sheep pox and its control in Egypt.**—Bull. Off. int. Epiz. 53, [Nos. 11-12.] 1527-1539. [In English. In French pp. 1540-1551.] 2520

In Egypt, sheep pox is widespread, usually mild in the summer but severe in the winter amongst the new-born lambs. A sensitized liquid vaccine imported from Algeria has proved unsatisfactory because of its poor keeping quality. S. described the preparation in sheep of a desiccated live virus vaccine: a Roumanian strain of the virus is injected subcutaneously and the vaccine prepared from the subsequent oedematous and gelatinous subcutaneous fascia. This vaccine is safe, has a titre of 10^{-8} , and produces a moderate reaction when 0.5 of a 1:25 dilution is injected intradermally in the ventral surface of the tail. It gives complete protection against challenge with virulent Egyptian strains from 9 days after inoculation for at least 14 months.—A. ACKROYD.

Hoekstra, J. & Smit, T. (1961). **Immunisatie tegen kanariepokken. [Immunisation against canary-pox.]**—Tijdschr. Diergeneesk. 86, 243-247. [In Dutch. Summaries in English, French and German.] 2521

Immunization of canaries against canary-pox with a killed canary-pox or a live pigeon-pox vaccine was unsatisfactory. Live turkey-pox virus, however, was sufficiently effective to protect canaries against the harmful effect of a live, slightly attenuated canary-pox virus.—E.G.

Spence, L., Belle, E. A., McWatt, E. M., Downs, W. G. & Aitken, T. H. G. (1961). **An outbreak of equine encephalitis in the Rupununi, British Guiana.**—Amer. J. Hyg. 73, 173-181. [Authors' summary modified.] 2522

Neutralizing antibodies to both Eastern and Western equine encephalitis viruses were encountered in equines. Both viruses were isolated from the brain of one of the horses.

Berge, T. O., Banks, I. S. & Tigertt, W. D. (1961). **Attenuation of Venezuelan equine encephalomyelitis virus by in vitro cultivation in guinea-pig heart cells.**—Amer. J. Hyg. 73, 209-218. [Authors' summary modified.] 2523

Forty-five subpassages of the Trinidad strain of Venezuelan equine encephalomyelitis virus in g.pig heart cell tissue culture resulted in almost complete attenuation of the virus for mice when inoculated intracerebrally and intraperitoneally. Mice infected with the attenuated tissue-culture virus resisted intracerebral challenge with 1,000 or more median lethal doses of the unmodified parent virus. After 3 serial mouse-brain passages, the attenuated virus regained the capacity to kill mice when inoculated intracerebrally, but the intraperitoneal virulence remained modified after 9 brain passages.

Kuehne, R. W. & Gochenour, W. S., Jr. (1961). **A slit sampler for collecting T-3 bacteriophage and Venezuelan equine encephalomyelitis virus. II. Studies with Venezuelan equine encephalomyelitis virus.**—Appl. Microbiol. 9, 106-107. [Authors' summary.] 2524

The slit sampler has been successfully employed for recovery of aerosolized Venezuelan equine encephalomyelitis virus. The use of a gelatin-base solid medium has permitted liquefaction and dilution at temperatures tolerated by the virus, and examination by standard virological techniques. Estimates of virus concentration of the aerosol obtained are comparable to those obtained by use of liquid impingers. Long-term, large-volume air sampling with the slit sampler for the detection of air-borne viruses appears feasible and practical.

Montes de Oca, H., Schajowicz, F., Cabrini, R. L., Falcoff, E. & Epstein, B. (1960). **Multiplicación de diferentes virus en cultivos de tejidos de una nueva cepa celular, T 9 (CNEA).** [Multiplication of viruses in cul-

tures of a new cell strain, T 9.]—Rev. Fac. Cienc. vet. La Plata 2, 143-146. 2525

The cell strain was obtained from a bone reticulosarcoma in a man. It supports the multiplication of equine encephalomyelitis virus and poliomyelitis virus, cell destruction occurring between 15 and 72 hours after inoculation.—M.G.G.

Matumoto, M., Shimizu, T. & Ishizaki, R. (1960). Anticorps contre le virus rhinopneumonique du cheval dans le sang de chevaux provenant de Suisse. [Antibodies to equine rhinopneumonitis virus in Swiss horses.]—C. R. Soc. Biol., Paris 154, 1685-1687. 2526

Neutralizing antibodies for equine rhinopneumonitis virus were demonstrated in serum from 19 of 20 horses in Switzerland, and c.f. antibodies in 17.—M.G.G.

Yaoi, H., Nagata, A. & Saito, K. (1960). Studies on the virus of equine infectious anaemia. Report 6. Isolation of the virus by serial transmission in rabbits. — Yokohama med. Bull. 11, 1-20. [In English.] 2527

Anaemia developed in a rabbit 2 months after i/d injection of concentrated serum from a horse with experimental infectious anaemia. Using a mixture of liver and spleen material and the s/c and i/d routes of infection, 12 serial passages of the virus were accomplished in rabbits weighing 1 kg. Clinical signs appearing within 3 weeks after infection were anaemia, loss of weight, and occasionally pyrexia and leucocytosis. Liver and spleen from rabbits of the 9th passage were stored at -20°C. for 7 months before being used for the 10th passage.—M.G.G.

Anon. (1961). Report of the FAO/OIE emergency meeting on African horse sickness and African swine fever, held in Paris, France, 17th to 20th January 1961. pp. 26. Rome: Food and Agriculture Organization of the United Nations. Report No. AN-1961/1. 2528

Delegates from 31 countries and 5 international organizations participated in the meeting. African horse sickness spread to at least 10 countries during 1959 and 1960. Vaccination is being practised in these and in neighbouring countries. Severe reactions to vaccination were reported in Cyprus, India and Pakistan. Of 12,000 donkeys vaccinated in Cyprus, 5% died. A draft plan for the control of the disease included routine insecticidal spraying of airfields and their

environs, regular disinfection of international transport at ports of entry to in-contact countries, immunization of all equines within 10 miles of international ports and communication centres in infected and in-contact areas, and the creation of buffer zones by immunization. The cost of the plan was estimated to be \$757,500. The establishment of a Near East Animal Health Institute has been approved, which is to provide a Research Unit on horse sickness in collaboration with the Razi Institute, Teheran.

The history, present situation, clinical and P.M. features, diagnosis and measures for the control of African swine fever were summarized. All outbreaks in Spain were controlled by the end of 1960. In January 1961, 4 new outbreaks occurred in central Portugal; all the pigs were destroyed immediately. It was recommended that experts from different countries be sent to a centre to be trained in the diagnosis of this disease.—M.G.G.

Haig, D. (1961). United Nations. Report to the Government of Turkey on the production of African horse sickness vaccine. pp. 5. Rome: Food and Agriculture Organization of the United Nations. [FAO/ETAP Report No. 1307.] 2529

Improvements, increases of staff and additional equipment were recommended at the Veterinary Institute at Elazig, to render it capable of producing freeze-dried horse-sickness vaccine on a large scale. The advantages of converting it into an institute for the study of all virus diseases of animals and the extensions that would then be necessary were discussed.—M.G.G.

Pavri, K. M. (1961). Haemagglutination and haemagglutination-inhibition with African horse-sickness virus. — Nature, Lond. 189, 249. 2530

Haemagglutination by 3 strains of African horse-sickness virus was observed but only with erythrocytes from equines. The most satisfactory antigen was a sucrose-acetone extract of infected unweaned mouse brains, treated with protamine sulphate, and the best results were obtained with 0.5% horse r.b.c. at pH 6.4 and incubation at 37°C. for 1½-2 hours. A haemagglutination-inhibition test using sera extracted with acetone, which it is hoped may be type-specific, is being studied; as yet it does not give a sharp endpoint.—A. ACKROYD.

Monteverde, J. J., Garbers, G. V. & De Carlo, J. M. (1960). Exantema coital en yeguas P.S.C. Resumen y conclusiones. [**Coital exanthema in mares.**]—Rev. Fac. cienc. vet. La Plata 2, No. 4 pp. 37-38. 2531

An account is given of coital exanthema in mares in a Thoroughbred stud in Argentina. Incubation was 5-7 days in natural and 3-4 in experimental infection. The course of uncomplicated infection was 15 days (10-12 in experimental infection). Artificial transmission was achieved by submucosal inoculation in the vagina, of bacteria-free filtrate of lesion tissue.—T.E.G.R.

Agresti, A., Catellani, G. & Galati, P. (1960). Episodio di febbre catarrale maligna del bufalo osservato per la prima volta in Italia. [**Malignant catarrh in buffaloes in Italy.**]—Acta med. vet., Napoli 6, 545-572. [Summaries in English, French and Spanish.] 2532

An account is given of malignant catarrhal fever in a buffalo calf aged 6 months. The animal was one of a group of 50, in central Italy, in which the disease was endemic (first observed in 1954) with a morbidity which may reach 50-60% in bad years and mortality of 90-100%, the course of the disease being 15-20 days. Transmission experiments in lab. animals yielded negative results.—T.E.G.R.

Polony, R., Vrtiak, J., Koppel, Z. & Benko, L. (1961). Výskyt sporadickej bovinnej encefalomyelitidy. [**Incidence of sporadic bovine encephalomyelitis in Slovakia.**]—Vet. Čas. 10, 110-116. [In Slovak. Summaries in English, German and Russian.] 2533

A virus of the psittacosis-lympho-granuloma group was isolated from six calves, which had died of sporadic encephalomyelitis when 3-5 days old. Of 37 blood samples collected from other members of the herd, 20 yielded positive c.f. reactions with psittacosis antigen. The clin. picture, P.M. appearance and histology of lesions was described.—E.G.

Darbyshire, J. H., Brown, R. D., Scott, G. R. & Huck, R. A. (1961). A serological differentiation of rinderpest and bovine mucosal disease by agar gel diffusion.—Vet. Rec. 73, 255-256. 2534

The differential diagnosis of rinderpest has recently been complicated by the recognition of several clinically related syndromes such as virus diarrhoea and mucosal disease. Antisera to rinderpest and

a mucosal disease have been tested by the agar gel diffusion method against antigens of these diseases in both Gt. Britain and Kenya and no cross-reactions have been observed between the antisera and heterologous antigens. The agar gel diffusion test appears of value in differentiating these diseases.—A. ACKROYD.

York, C. J., Rosner, S. F. & MacLean, G. J. (1961). Evaluation of vaccines for virus diarrhoea of cattle.—Proc. 64th Ann. Meet. U.S. Livestock Sanit. Ass., Charleston, 1960. pp. 339-343. 2535

A comparison of rabbit-adapted live virus with live virus modified by culture in bovine kidney cells showed that both were equally effective in protecting cattle from virus diarrhoea in laboratory and field trials.—R.M.

Tournut, J., Lacaze, B., Redon, P. & Laporte, J. (1961). Identification de la maladie muqueuse dans le Sud-Ouest de la France. [**Identification of bovine mucosal disease in south-west France.**]—Rev. Méd. vét. 112, 81-90. [Summaries in English and Spanish.] 2536

In 3 outbreaks of mucosal disease in the south-west of France, only the younger cattle less than 2½ years old were affected. A detailed account is given of the symptoms and P.M. lesions in a heifer. Leucopenia was not observed in this animal nor in a calf that developed symptoms of mucosal disease after inoculation of filtered blood serum from the heifer. In one of the outbreaks 6 young cattle after developing fever were treated i/v with citrated blood from a 4-year-old cow that had been in contact with the first case in the herd 6 weeks previously. The fever abated and no further symptoms were seen.—M.G.G.

Gale, C. & King, N. B. (1961). Isolation of a virus from clinical shipping fever in cattle.—J. Amer. vet. med. Ass. 138, 235-238. 2537

A viral agent cytopathogenic for bovine kidney tissue cultures was isolated from the nasal washings of 2 out of 12 feeder calves exhibiting marked clinical signs of shipping fever. It agglutinated g.pig and bovine r.b.c., was not neutralized by infectious bovine rhinotracheitis convalescent serum, but was neutralized by serum from convalescent calves and by SF 4 antiserum. Calves exposed to the virus in an aerosol mist had a rise in body temperature and mild signs of disease. *Pasteurella multocida* and *Past. haemolytica* were isolated from some of the affected calves, but not PPLO.—A. ACKROYD.

Klein, M., Zellat, J. & Michaelson, T. C. (1960). **A new bovine adenovirus related to human adenovirus.**—*Proc. Soc. exp. Biol., N.Y.* 105, 340-342. [Authors' summary modified.] 2538

A second bovine adenovirus was isolated from faeces of an apparently healthy calf. It was antigenically similar to a human virus as determined by neutralization with human gamma globulin and human adult sera, and possession of a complement-fixing antigen similar to that of the human adenovirus. The related type of human adenovirus remains unknown. [for description of the first bovine virus see *V.B.* 30, 1427.]

Darbyshire, J. H. (1961). **A fatal ulcerative mucosal condition of sheep associated with the virus of contagious pustular dermatitis.**—*Brit. vet. J.* 117, 97-105. 2539

Investigation of sudden unexplained deaths amongst lambs from Kent and Berkshire being used for the production of contagious pustular dermatitis and louping-ill vaccines revealed that death was due to a severe form of contagious pustular dermatitis. Bluetongue and a condition related to mucosal disease of cattle were excluded. Initially the predominant signs were pneumonic with mucopurulent nasal discharge, but subsequently erosive stomatitis followed by gastroenteritis of varying severity became the dominant feature. The outbreak lasted about 2 months and was associated with a mortality rate of up to 78%. Multiple ulcerative or pustular eruptions were found in the mouth, cheeks, tongue, lips and parts of the gastrointestinal tract. In addition, acute myocarditis, haemorrhagic pneumonia and liver degeneration or focal necrosis were often present.—A. ACKROYD.

Pleva, J. & Jurčina, A. (1961). **Diagnostika moru ošipných pomocou precipitácie v agare.** [The gel-diffusion test for the diagnosis of swine fever.]—*Vet. Čas.* 10, 117-121. [In Slovak. Summaries in English, German and Russian.] 2540

Using as antibody serum from rabbits hyperimmunized with lapinized virus, and as antigen tissues or serum from sick pigs, precipitation lines formed in 80% of tests after 24 hours' incubation at 35°C. Precipitation lines were clearest with mesenteric lymph nodes from pigs which had died of swine fever, less clear with pancreas and spleen, and least with liver.—E.G.

Hess, W. R. & DeTray, D. E. (1960). **The use of leukocyte cultures for diagnosing African swine fever (ASF).**—*Bull. epiz. Dis. Afr.* 8, 317-320. [Summary in French. Authors' summary modified.] 2541

Pig leucocyte cultures prepared from defibrinated blood were used in the haemadsorption test for African swine fever virus. This simplified method for preparing buffy coat cultures can be applied by those without previous experience in tissue culture techniques and should prove useful for the diagnosis of African swine fever.

Cowan, K. M. (1961). **Immunological studies on African swine fever virus. I. Elimination of the procomplementary activity of swine serum with formalin.**—*J. Immunol.* 86, 465-470. [Author's summary modified.] 2542

The procomplementary activity of pig serum was abolished by treatment with dilute formalin. Sera treated in this manner fixed g.pig complement in the presence of antigen, but serum titres were somewhat depressed. Because of the prozoning activity of untreated pig sera, little or no indication of fixation occurred with some sera of low antibody content. However, removal of the procomplementary activity of these sera with formalin either abolished or markedly reduced the prozone effect so that a c.f. reaction could be obtained.

I. Jacotot, H., Virat, B., Vallée, A., Levaditi, J.-C. & Guillon, J.-C. (1961). **Exaltation du pouvoir pathogène du virus de l'encéphalomyélite enzootique des porcs inoculé par voie hypodermique.** [Use of adjuvant for enhancing the pathogenicity of porcine encephalomyelitis virus inoculated subcutaneously into pigs.]—*Ann. Inst. Pasteur* 100, 141-152. 2543

II. Jacotot, H., Levaditi, J.-C., Vallée, A. & Virat, B. (1961). **Sensibilisation expérimentale du porc à l'antigène de l'encéphalomyélite enzootique.** [Experimental sensitization of pigs to the antigen of Teschen disease virus.]—*Ibid.* 420-426. 2544

I. Ground-up brain from three pigs with Teschen disease (20 g. of pulp) was mixed with 20 g. of sterile lanolin and 135 ml. liquid paraffin plus 1.5 ml. of 1:5 dilution of formaldehyde. Five pigs aged 7 months, inoculated s/c into the thigh with 10 ml. of the mixture developed after 6-9 days a paralytic syndrome similar to that seen after intracerebral inoculation of the virus. Subcutaneous inoculation of aqueous suspension

of virus usually had no effect on pigs. Further experiments showed that the mixture did not lose its pathogenicity after storage for 48 hours at 37°C. or several days at 6°. The authors suggested that virus bound to fat gained better access to nervous tissue by way of nerve lymphatics than virus in aqueous suspension. The role of formaldehyde was also discussed.

II. Pigs aged 2 or 3 months were inoculated [? s/c] with formalized infected brain tissue mixed either with aluminium hydroxide or lanolin and liquid paraffin. Six and a half months after vaccination two pigs from each group were inoculated intracerebrally with virus and resisted the challenge, except for one inoculated with the oily vaccine that developed encephalomyelitis. After a further six months (when 15 months of age) two more pigs of each group were inoculated i/m with a double dose of formalized antigen mixed with the adjuvants "Mayoline 2214" and "Arlacel A". This caused no trouble in the two that had received aluminium hydroxide vaccine, nor in two unvaccinated controls, but the two inoculated with oily vaccine suddenly developed after 5 days allergic reactions and died.

The two remaining pigs vaccinated with oily vaccine were inoculated i/m with adjuvant vaccine when 21 months old and they also developed severe allergic reactions.

It was concluded that oily vaccine was dangerous because it could sensitize pigs to revaccination.—R.M.

I. Larski, Z., Bielez, P. & Sury, A. (1961). Vliv krmení na vnímavost prasat k infekci virem Kloboukovy nemoci. [*Influence of diet on susceptibility of pigs to Teschen disease.*] — Sborn. čes. Akad. zemědělsk. Věd, vet. Med. 6, 19-24. 2545

II. Kábrt, J., Lebeda, M., Mesároš, E. & Oplištil, M. (1961). Vliv vyrovnané a deficientní výživy na průběh nakažlivé obry prasat (Kloboukovy nemoci). [*Influence of diet on the course of Teschen disease.*]—Ibid. 25-34. [In Czech. Summaries in English and Russian.] 2546

I. In two groups each of eight piglets, fed rations of either high or low protein content, protein deficiency appeared to increase susceptibility to experimental infection with Teschen disease virus by shortening the incubation period.

II. Intranasal infection of 13 pigs on a diet rich in carbohydrates but deficient in

protein, calcium, carotene, vitamins C, D and some of the B group took the same course as intranasal infection in pigs normally fed, except that symptoms appeared sooner.—E.G.

I. Ursiny, J. (1961). Problém Kloboukové nemoci v ČSSR. [*The Teschen disease problem in Czechoslovakia.*]—Sborn. čes. Akad. zemědělsk. Věd, vet. Med. 6, 97-106. 2547

II. Dražan, J. (1961). Kolostrální imunita při Kloboukové nemoci. [*Maternal transfer of immunity to Teschen disease through colostrum.*]—Ibid. 69-74. 2548

III. Dobeš, M. (1961). Klobouková nemoc z hlediska hygieny masa. [*Meat hygiene aspects of Teschen disease.*]—Ibid. 141-146. 2549

IV. Lax, T. (1961). Příspěvek k likvorologii Kloboukovy nemoci. [*Study of the cerebrospinal fluid in Teschen disease.*]—Ibid. 147-154. [In Czech. Summaries in English, German and Russian.] 2550

I. A discussion on the history of Teschen disease and its control in Czechoslovakia, with details of an eradication programme consisting of large-scale vaccination by regions, repeated at short intervals and supplemented by strict veterinary police measures.

II. Teschen disease virus antibodies were demonstrable (by serum neutralization tests in piglets and in tissue culture), in the colostrum of sows vaccinated 25 days before parturition with twenty times the normal dose of vaccine, but not in their new-born offspring before their first suck. Piglets reared without colostrum were more susceptible to Teschen disease than those suckled from birth, even with colostrum not containing specific antibodies.

III. Brain, cord and blood from Teschen disease herds should be declared unfit for consumption. Blood should not be spray-dried but processed at high temperatures. Meat from pigs with clinical Teschen disease should be classed as conditionally fit and sterilized before sale as inferior quality pork or for the production of lower grade meat products. The establishment is suggested of an international coordination authority with the task of standardizing meat inspection, import and export regulations in respect of Teschen disease. Attention should be devoted to research on the clarification of the Teschen disease-polioomyelitis relationship.

IV. The cerebrospinal fluid was studied in 96 pigs, 22 of which were healthy and the remainder either experimentally or

spontaneously infected. C.s.f. in Teschen disease was clear and colourless. In about half of the samples fibrinous precipitation occurred within 24 hours. Globulin tests ranged from negative to weakly positive. There was generally an increase in the number of lymphocytes and in the albumin content.—E.G.

Szaflarski, J. (1961). Choroba cieszyńska w Polsce, ze szczególnym uwzględnieniem woj. katowickiego w latach 1949–1959. [**Teschen disease in Poland in 1949–1959.**]—Med. Wet., Warszawa 17, 129–133. [In Polish.] 2551

In Poland the disease was first reported in September 1949 in an area adjoining the Czech border. From there it spread and outbreaks reached a peak in 1953. After that the incidence gradually fell and no outbreaks were recorded in the first half of 1960.

—M. GITTER.

I. Mádr, V. (1961). Použitelnost vakcín proti Kloboukově nemoci připravených z viru pomnoženého na tkáňových kulturách. [**A tissue culture vaccine against Teschen disease.**]—Sborn. čes. Akad. zemědělsk. Věd, vet. Med. 6, 107–112. 2552

II. Košťanský, K. (1961). Několik poznámek k imunoprophylaxi nakažlivé obrny prasat (Kloboukova nemoc). [**Immunization against Teschen disease.**]—Ibid. 113–118. 2553

III. Larski, Z. (1961). Použití vakcín z tkáňových kultur proti Kloboukově nemoci. [**Tissue culture vaccines against Teschen disease.**]—Ibid. 119–120. 2554

IV. Harnach, R., Mesároš, E. & Pleva, V. (1961). Pokusná imunizace tkáňovou kulturou viru Kloboukovy nemoci, inaktivovanou krystalovou violetí. [**Immunization against Teschen disease with crystal-violet inactivated tissue culture virus.**]—Ibid. 129–132. [In Czech. Summaries in English, German and Russian.] 2555

I. Formolized Teschen disease vaccines were unsatisfactory. Phenolized vaccine conferred immunity to intracerebral challenge in 75% of pigs, even after it had been stored for 102 days at 14°C. Details were given of the development of a pig kidney epithelium monolayer culture virus, attenuated by serial passage. Pigs infected intracerebrally with the 92nd passage remained healthy. The 100th and subsequent passages immunized 70–100% of pigs when given s/c or by mouth.

II. K. stated that adsorbed Teschen disease vaccine containing inactivated virus is harmless, even for pregnant sows, and should

be used in infected or threatened herds, but only in clinically healthy animals, the flank being the injection site of choice. Young stock and pigs in heavily infected areas should be revaccinated.

III. In Poland, Teschen disease vaccines prepared from tissue culture virus, although of a lower immunogenicity than those prepared from brain-cord suspensions, had proved satisfactory.

IV. Two s/c doses with an interval of 3 weeks, of 3 ml./10 kg. body weight of a crystal violet inactivated tissue culture vaccine, protected 11 of 16 pigs against intranasal infection with 2 ml. of virulent Teschen disease virus 21 days later.—E.G.

Rossi, L. (1961). Simultánní (kombinovaná) a sdružená imunizace proti července a nakažlivé obrně vepřů (Kloboukově nemoci). [**Combined vaccination against swine erysipelas and Teschen disease.**]—Sborn. čes. Akad. zemědělsk. Věd, vet. Med. 6, 123–128. [In Czech. Summaries in German and Russian.] 2556

The immunizing effect was studied in 1,742 pigs of adsorbed Teschen disease and swine erysipelas vaccines, given s/c into the flank either simultaneously or as a mixture. Vaccination by either method was well tolerated and protected all pigs against subsequent challenge with virulent *E. rhusiopathiae* culture and over 82% against challenge with Teschen disease virus. An 8 ml. dose of the mixed vaccine, consisting of 3 parts of Teschen disease and 2 parts of swine erysipelas vaccine, followed by a similar booster dose 28 days later, protected all pigs so treated. The time-saving aspect of the latter method was stressed.—E.G.

Brauner, I. & Malik, J. (1961). Hybridizácia—rekombinácia vírusu Kloboukovej choroby (infekčná obrna ošípaných) s vírusmi psinky a moru hydiny. [**Hybridization—recombination of Teschen disease virus with distemper and Newcastle disease virus.**]—Sborn. čes. Akad. zemědělsk. Věd, vet. Med. 6, 81–88. [In Slovak. Summaries in English and Russian.] 2557

Passage of Teschen disease virus in chick embryos resulted in the production of a variant which, although non-pathogenic for pigs, was of practically no value immunologically. Repeated passage in chick embryos of a mixture of Teschen disease and distemper virus, or Teschen disease and Newcastle disease virus (B1), produced a variant of low

pathogenicity but high immunizing capacity for pigs.—E.G.

Pehl, K.-H. (1960). Die Ferkelgrippe als Virusinfektion und ihre Prophylaxe. [**Piglet influenza and its prevention.**]—S. B. Dtsch. Akad. LandtWiss. 9, No. 4 pp. 21. [Summaries in English and Russian.] 2558

There are three distinct groups of porcine pneumotropic viruses: American (Shope's) swine influenza virus; viruses serologically related to Shope's virus isolated in Czechoslovakia, Poland and Korea; Köbe's piglet influenza virus together with Swedish and British strains of porcine pneumonia virus. P. recommended that the German term Ferkelgrippe (piglet influenza) should be abandoned in favour of 'Viruspneumonie der Schweine' (virus pneumonia of pigs).

P. recovered the virus from experimentally infected pigs for up to 16 weeks. Lung tissue remained infectious after 10 months' storage in deep-freeze. Attempts to infect mice, to grow the virus in chick embryos, and to find a serological test had failed. Prevention of droplet infection by housing infected pigs at least two metres from healthy ones was the only satisfactory method of prophylaxis.—E.G.

Mongeau, N. (1961). **Hepatic distomatosis and infectious canine hepatitis in Northern Manitoba.**—Canad. vet. J. 2, 33-38. [Summary in French.] 2559

A disease which killed a large number of sledge dogs was manifested by distemper-like nervous symptoms. Heavy infestation of the liver with the fluke *Metorchis conjunctus* was present, also intranuclear inclusions typical of canine virus hepatitis.—R.M.

Shimizu, Y., Kunishige, T. & Hirato, K. (1960). **Immunological studies on the infectious canine hepatitis virus. II. Hemagglutinin.**—Jap. J. vet. Res. 8, 271-278. [In English.] 2560

Tissue culture fluid containing the Matsuda or WOC 4 strains of infectious canine hepatitis virus agglutinated g.pig and human erythrocytes but not those of other species. The reaction was optimal at 37°C. in phosphate buffer saline solution at pH 7.5 using 0.5 ml. of a 0.25% suspension of erythrocytes and a 0.23M glucose solution containing 0.02M sodium chloride. Unlike the complement-fixing antigen of the virus, the haemagglutinin and the infective unit were stable for only 5 min. at 56°C. and could be

adsorbed and eluted on a 20% suspension of human erythrocytes.—A. ACKROYD.

Sinha, S. K. & Burger, D. (1961). **Some findings concerning a report on the cultivation of feline panleukopenia virus in cell culture.**—Canad. vet. J. 2, 62-64. [Summary in French. Authors' summary modified.] 2561

Kittens inoculated with Bolin's virus [V.B. 28, 1435] remained normal, but others inoculated with feline panleukopenia virus succumbed to panleukopenia. Kittens given Bolin's virus developed antibody to this virus, but succumbed to challenge with panleukopenia virus.

Sera from animals previously immunized with Bolin's virus showed specific neutralization of the homologous virus, whereas hyperimmune panleukopenia sera failed to neutralize Bolin's virus. Complement-fixation tests supported these results. The authors concluded that Bolin's virus is not feline panleukopenia virus.

Rendtorff, R. C. (1961). **The transmission of rabbit fibromas by nematodes.**—J. Parasit. 47, 185. 2562

Typical fibromas developed in rabbits after gauze pads impregnated with a mixture of rabbit papilloma virus and *Nippostrongylus muris* or *Strongyloides ratti* larvae had been applied for one hour to the unbroken skin. Application of larvae or virus alone did not induce fibroma. *N. muris* larvae were incubated at 36°C. for 2 hours in a 20% suspension of fibroma virus, washed, and injected into rats. Rabbits did not develop fibroma after i/d injection of *N. muris* material recovered from these rats.—M.G.G.

Calaby, J. H., Gooding, C. D. & Tomlinson, A. R. (1960). **Myxomatosis in Western Australia.**—C.S.I.R.O. Wildlife Res. 5, 89-101. 2563

An intensive and official campaign to establish the virus in Western Australia was commenced in 1951, but except for 2 extensive epidemics, myxomatosis has not been a significant factor in rabbit control in that State. Because of the absence of large, permanently flowing streams, combined with the usual summer drought, the most important myxomatosis vectors, *Anopheles annulipes* and *Culex annulirostris*, occur only in relatively small numbers. The disease is kept going, without noticeable effect on the rabbit population, by mosquitoes which are present

in low numbers over a wide area, and by other insects.—A. CULEX.

Vrtiak, O. J., Polony, R. & Gdovinová, A. (1960). Kultivácia a cytopatogénny účinok vírusov moru hydiny na tkanivových kultúrach. [**Cultivation and cytopathogenicity of the viruses of fowl plague and Newcastle disease in tissue culture.**]—Folia vet., Košice 4, 137-145. [In Slovak. Summaries in English, German and Russian.] 2564

Fibroblasts of mouse, chick, dog, calf and monkey kidney, and epithelial tissue of human carcinoma were susceptible to infection with two strains of Newcastle disease virus, one grown in tissue culture, the other in chick embryos. In addition, fibroblasts of chick and monkey kidney, but not the others, were also susceptible to classical fowl plague virus. The amount of virus in the inoculum was directly related to haemagglutinin formation. There was no difference between the two Newcastle disease viruses in respect of their haemagglutinating capacity for fowl, sheep, goat, ox, g.pig, dog and pig corpuscles. Neither of the strains agglutinated horse erythrocytes.

—E.G.

Osteen, O. L., Mott, L. O. & Gill, E. (1961). **The use of killed virus vaccine to control Newcastle disease.**—Proc. 64th Ann. Meet. U.S. Livestock Sanit. Ass., Charleston, 1960 pp. 232-234. 2565

The authors stressed the disadvantages of live vaccines currently used in the U.S.A. (perpetuation of the disease and stimulation of latent infections such as air-sac infection). Now that an effective killed vaccine has been produced by the use of beta-propiolactone, State livestock officials should advocate its use.

—R.M.

Marek, K. (1961). Szczepionka F przeciw pomorowi rzekomemu ptaków zanieczyszczona zjadliwym wirusem. [**Attenuated Newcastle disease vaccine contaminated with virulent virus.**]—Med. Wet., Warszawa 17, 136-141. [In Polish. Summaries in English, French, German and Russian.] 2566

Initially the field use of the contaminated vaccine did not reveal the presence of the virulent virus but eventually two outbreaks of the disease occurred. Contamination of the vaccine could be detected by intracerebral injection of day-old chicks susceptible to Newcastle disease.—M. GITTER.

Hababou Sala, J. (1960). Premiers cas de guérison de peste aviaire au virus de Newcastle par la corticothérapie. [**Corticosteroid treatment of Newcastle disease.**]—C. R. Soc. Biol., Paris 154, 1423-1424. 2567

One or 2 drops daily of 1% hydrocortisone acetate was given orally for 4 days to 13 three-weeks-old chicks with Newcastle disease. Seven recovered, but 3 of these died with nervous symptoms 2 weeks later. The remaining 4 developed normally to the age of 3½ months, and chicks in contact with them did not develop Newcastle disease.—M.G.G.

Mason, E. J. & Kaufman, N. (1961). **The persistent production of small quantities of infectious Newcastle disease virus in grossly unaltered L and U₁₂ strain cells.**—J. Immunol. 86, 413-420. [Authors' summary modified.] 2568

Strain U₁₂ was a culture of human uterine cells. Low concentrations of ND virus were persistently elaborated by cells infected with small inocula. Even though they contained virus, the carrier cell lines were as susceptible as previously uninoculated stock cell cultures to the toxic effect of large virus inocula.

Calnek, B. W., Taylor, P. J. & Sevoian, M. (1960). **Studies on avian encephalomyelitis. IV. Epizootiology.**—Avian Diseases 4, 325-347. [Authors' summary modified.] 2569

Susceptible birds placed in a colony house previously holding infected fowls became serologically positive within 3 to 7 weeks. Chicks could be infected by the intestinal route alone. Administration of the virus in drinking water to susceptible adult fowls produced a syndrome indistinguishable from that observed in field outbreaks: drop in egg production, lowered hatchability, and egg transmission of virus occurred between 6 and 13 days after exposure. Virus was demonstrated in the faeces during the same interval.

Transmission of the virus took place from egg-infected chicks to contact chicks either in the incubator or in batteries after hatching. Clinical signs appeared at about 11-16 days following contact.

I. Schaaf, K. (1961). **Field control of avian encephalomyelitis.**—Proc. 64th Ann. Meet. U.S. Livestock Sanit. Ass., Charleston, 1960 pp. 213-220. 2570

II. Taylor, J. R. E. (1961). **The control of avian encephalomyelitis by the application of**

susceptibility test and vaccination by the water procedure.—*Ibid.* pp. 221-222. 2571

I. S. discussed problems of immunization, with special reference to live vaccines.

II. Taylor has previously described inhibition of encephalomyelitis virus multiplication in embryonated eggs from infected hens [*V.B.* 30, 3593]. This was a convenient test for flock infection. T. was trying to develop a drinking-water vaccine.

—R.M.

Chang, P. W., Yates, V. J., Dardiri, A. H. & Fry, D. E. (1960). **Some observations of the propagation of infectious laryngotracheitis virus in tissue culture.** — *Avian Diseases* 4, 384-390. [Authors' summary modified.] 2572

Cytopathic effect and plaques in chick-embryo kidney cells were produced by three strains of infectious laryngotracheitis virus. Its ability to produce plaques was neutralized by specific immune serum. Differences in rate of growth, morphology and size were found in plaques formed by laryngotracheitis, chick-embryo-lethal-orphan (CELO) and Newcastle disease viruses.

Sevoian, M. (1960). **A quick method for the diagnosis of avian pox and infectious laryngotracheitis.** — *Avian Diseases* 4, 474-477. [Author's summary modified.] 2573

S. described a rapid, histological method involving simultaneous fixing and dehydration of tissues. With hematoxylin and eosin stains, intranuclear inclusions for laryngotracheitis and cytoplasmic inclusions for avian pox were demonstrated in less than 3 hours.

Holmes, J. R. (1961). **Postmortem findings in avian osteopetrosis.**—*J. comp. Path.* 71, 20-27. [Author's conclusions modified.] 2574

Observations on the changes in the parenchymatous organs of 108 birds with osteopetrosis are recorded and the results are compared with normal birds and birds which were inoculated as described previously [*V.B.* 29, 744 & 30, 825] but failed to develop osteopetrosis. The possible association between osteopetrosis and the avian leucosis complex is considered. The findings tend to support the view that avian osteopetrosis is caused by a separate infective agent and the nature of the bone lesions and the low incidence of soft tissue changes typical of leucosis in affected birds provide strong evidence that the disease should be considered as a separate entity.

Bell, D. J. & Campbell, J. G. (1961). **Pathological and biochemical observations on virus-induced osteopetrosis gallinarum.**—*J. comp. Path.* 71, 85-93. [Authors' conclusions modified.] 2575

Eighteen cases of osteopetrosis induced by a field virus provided by Holmes (1959) were examined clinically, biochemically and post-mortem. Infection of day-old chicks resulted in a high proportion of cases with well advanced lesions at 14 weeks. Males were more susceptible than females.

Bone lesions were, at least initially, confined to the long bones of the wing and leg. Subsequent involvement of the pectoral girdle occurred.

No changes in the viscera could be detected beyond splenic atrophy, delayed maturation of the gonads and, in some females which showed minor bone involvement, a peculiar endotheliosis of the liver, grossly simulating cirrhosis. In the main, the parathyroids appeared normal.

The blood picture was characteristic of myelophthisic anaemia. No evidence of concomitant leucaemia was found. The lack of marrow in the long bones was compensated by development of extramedullary erythropoietic centres.

Plasma alkaline phosphatase activity was high in birds with clinical or radiological signs; this is indicative of the high osteoblastic activity in the bone. Although values for acid phosphatase averaged a little higher than in the controls it was not possible to correlate this with increased osteoclasia.

Calcium, both diffusible and non-diffusible, appeared unaffected by the dystrophy. Plasma citrate averaged slightly higher than controls.

The authors had detected no instance of neoplasia in any of their cases to date.

Yates, V. J. (1960). **Characterization of the chicken-embryo-lethal-orphan (CELO) virus.** — *Dissertation, Wisconsin*. pp. 185. [Abst. from *Diss. Abstr.* 21, 431. (1960).] 2576

The virus already described [*V.B.* 28, 142] was propagated in monolayers of chick embryo cells as well as in chick embryos. Various antibiotics had no apparent effect on its virulence. It did not pass a membrane filter having a pore size of 50 m μ ; electron microscopy revealed a particle size of 80 m μ . When the virus was inj. i/v into fowls aged 5 or 6 weeks it had no apparent harmful effect, but was retained by body tissues for at least

7 days and also found its way into the intestine. It caused fatal respiratory infection when inoculated i/m or conjunctivally into quail aged 10–21 days and into adult sparrows. The virus appeared to be widespread among fowls in the U.S.A.—R.M.

Macpherson, I., Wildy, P., Stoker, M. & Horne, R. W. (1961). **The fine structure of GAL—an avian orphan virus.**—*Virology* 13, 146–149. 2577

The virus was isolated by Sharpless *et al.* [*V.B.* 28, 2931] from material containing virulent avian lymphomatosis virus. The name GAL was later suggested for this virus [*V.B.* 31, 1551].

The virus resembles adenoviruses biologically and it also has microscopical similarities. But it is like herpes virus and polyoma virus because it has hollow, elongated capsomeres, which appear to be separated from one another.—R.M.

Gale, C. (1961). **Ornithosis in turkeys.**—*Proc. 64th Ann. Meet. U.S. Livestock Sanit. Ass., Charleston, 1960* pp. 223–231. 2578

A discussion of the literature with special reference to the U.S.A.—R.M.

Endo, M., Kamimura, T., Kusano, N., Kawai, K., Aoyama, Y., Tajima, Y., Suzuki, K. & Kotera, S. (1960). Étude du virus B au Japon. II. Le premier isolement du virus B au Japon. [**Virus B in Japan. II. First isolation of the virus.**]—*Jap. J. exp. Med.* 30, 385–392. [In French.] 2579

A herpes-like disease was observed in 12 monkeys of 3 species in a colony in Japan. Virus B was isolated from one, *Macaca cyclopis* imported from Formosa, by s/c inoculation of rabbits with emulsions of vesicles and organs.—M.G.G.

Anon. (1961). **Cat-scratch disease.**—*Brit. med. J.* January 21st, 189–190. 2580

The clinical picture and differential diagnosis of cat-scratch disease of man were reviewed, together with experimental work on the disease. Evidence indicates that it is of virus origin and transmitted mainly by the cat.—M.G.G.

Terzin, A. I., Matuka, S., Fornazarić, M. R. & Hlaća, D. M. (1961). **Preparation of group-specific Bedsonia antigens for use in complement-fixation reactions.**—*Acta Virologica,*

Prague 5, 78–85. [Authors' summary modified.] 2581

The authors prepared three group-specific psittacosis antigens of satisfactory potency, free from anticomplementary or non-specific activities when tested by c.f. tests. One of the three antigens described usually showed a maximal titre of 1:1,024.

Jadin, J., Léonard, J. & Thomas, J. (1960). Néo-rickettsies et avortement chez les bovidés en Belgique. [**Neorickettsial abortion in cows in Belgium.**]—*C. R. Soc. Biol., Paris* 154, 1127–1128. 2582

In Belgium, of 314 sera from aborting cows serologically negative for brucellosis, 32 reacted solely to antigen prepared from the neorickettsial strain Q 18, 63 agglutinated both Q 18 and *Rickettsia burneti*, and 143 *R. burneti* alone. Of 2,516 aborting cows on 1,663 farms, 1,029 (41%) on 642 (39%) farms agglutinated *Br. abortus*; 18% had antibodies for neorickettsia and 39% for *R. burneti*.—M.G.G.

Pickens, E. G. & Gaon, J. A. (1960). **Growth of Coxiella burnetii in agar tissue culture.**—*Amer. J. trop. Med. Hyg.* 10, 49–52. [Abst. from authors' summary.] 2583

Minced chick-embryo tissue, bathed in a lactalbumin growth medium and planted on a modified Zinsser's agar medium, supported excellent growth of the Q fever organism.

Blanc, G., Ascione, L. & Bésiat, P. (1960). Rickettsiémie expérimentale de Testudo graeca avec *R. burneti*. Longue persistance de l'infection chez la tortue, passage et conservation du virus chez la tique *Hyalomma aegyptium*. [**Experimental Rickettsia burneti infection of tortoises with passage of the agent in Hyalomma aegyptium.**]—*Arch. Inst. Pasteur Maroc* 6, 49–55. 2584

R. burneti was demonstrated in *H. aegyptium* ticks that had fed on tortoises infected by the intra-abdominal or intracardial route, and also in the eggs and larvae of these ticks. *R. burneti* persisted in the blood of tortoises for at least 80 days after infection; no agglutinins were detected.—M.G.G.

Axelsen, A. (1961). **Effect of contagious ophthalmia on multiple lambing and sheep liveweight.**—*Aust. vet. J.* 37, 60–62. [Author's summary modified.] 2585

Contagious ophthalmia at or just before mating reduced the incidence of twinning in

both Merino and Border-Leicester cross ewes. Weight or weight gain was reduced during the 2 weeks of the disease. Except in very

severe cases, 2 to 4 weeks after recovery weight was equal to that of healthy sheep. Weight of the wool was not affected.

See also *absts.* 2783 (report, Agricultural Research Council, Great Britain); 2784 (report, Jamaica); 2785 (report, Norway).

IMMUNITY

Libich, M. (1961). **Immunochemical titration of antigens and antibodies in electric field: titration of antigens in complex systems and titration of individual determinant antigen groups.** — *Immunology* 4, 164-176. [Abst. from author's summary.] 2586

A quantitative immunochemical method has been developed for titration of antigens and antibodies in complex systems. It can be used for antigens migrating towards the anode in agar-gel electrophoresis only and for the corresponding antibodies where their mobility equals that of gamma globulin. Some bacterial toxins or toxoids comply with this condition.

The reaction takes place in agar gel. The reacting components are transported into the reaction arena by means of electric field; identification of individual components is facilitated by the fact that each precipitating antigen-antibody system is characterized by the electrophoretic mobility of antigen.

Lipton, M. M. & Steigman, A. J. (1961). **Experimental allergic encephalomyelitis in the chicken.** — *J. Immunol.* 86, 445-451. [Abst. from authors' summary.] 2587

Signs and histological lesions of allergic encephalomyelitis were induced by s/c inj. of emulsion of chicken brain and spinal cord in Freund's adjuvants.

White Leghorns developed disseminated c.n.s. lesions without displaying symptoms, whereas White Rocks developed both clinical and histological evidence of encephalomyelitis.

Chickens may recover from severe nervous symptoms despite the persistence of severe c.n.s. lesions.

Aronson, F. R., Bilstad, N. M. & Wolfe, H. R. (1961). **The pathology of anaphylactic shock in chickens.** — *Poult. Sci.* 40, 319-326. [Authors' summary.] 2588

Histopathological changes in acute anaphylaxis in the chicken were found in the parabronchi, where the lumina were greatly reduced in size and the blood capillary networks were constricted.

The kidneys showed localized areas of

enlarged glomeruli and convoluted tubules; engorgement was present beneath the capsule of the kidney.

Kidney damage due to repeated sublethal anaphylactic shocks included greatly swollen and damaged cellular-appearing glomeruli; accumulations of epithelial-like cells within the tubules and infiltration of round cells in scattered areas.

Frens, A. M., van der Grift, J. & Dammers, J. (1961). **Voedingsanafylaxie bij mestkalveren. [Anaphylaxis in calves fed milk substitutes.]** — *Tijdschr. Diergeneesk.* 86, 255-263. [In Dutch. Summaries in English, French and German.] 2589

Failure of synthetic milk substitute to coagulate in the abomasum as readily as cows' milk was associated with the death of a number of calves. The likelihood that death was due to anaphylactic shock resulting from sensitization with incompletely broken down proteins was postulated.—E.G.

Nelken, D., Gurevitch, J. & Gilboa-Garber, N. (1961). **Direct anti-globulin-consumption test for detection of immune antibodies.**—*Lancet*, April 8th, 742-744. [Authors' summary modified.] 2590

The test was relatively simple and gave easily reproducible results. Pure suspensions of erythrocytes, leucocytes, and thrombocytes from the blood to be examined are added to an anti-globulin serum of known titre and are left at room temperature for 30 minutes. The supernatant fluid is then tested for its anti-globulin titre against r.b.c. coated with incomplete anti-D serum. The difference in the titre of the anti-globulin serum before and after the addition of the examined cells is taken as a measure of their sensitization. If the cells are heavily coated, complete consumption of the anti-globulin takes place.

This test proved satisfactory in thrombocytopenic purpura, pancytopenia, and systemic lupus erythematosus. Positive results were obtained in leukaemia and generalised carcinomatosis.

The nature of the coating globulin is not

yet known, and it cannot be said with certainty that it is a true antibody.

Straus, E. K. (1961). **Occurrence of antibody in human vaginal mucus.**—Proc. Soc. exp. Biol., N.Y. 106, 617-621. [Author's summary modified.] 2591

Using typhoid vaccine, soluble typhoid bacillus antigen, and specific agglutinin as a model antigen-antibody system, S. demonstrated specific antibody in human vaginal mucus as a consequence of active immuniza-

tion. Vaginal antibody was produced in response to either parenteral or locally applied antigen but the response was greater to local stimulus. Vaginal agglutinin appeared earlier than serum antibody, reached a peak slightly sooner, and disappeared in 7-8 weeks though serum antibody persisted, often in relatively high titre. Vaginal antibody response to the primary and secondary inoculation appeared to be substantially the same, and was not affected by menstruation or intervening pregnancy.

See also absts. 2422-2424 (TB.); 2428-2429 (swine erysipelas); 2431-2434 (pasteurellosis); 2441 (salmonellosis); 2447-2451 (brucellosis); 2499 (fluorescein-labelled antibody technique for demonstration of *T. gondii* in tissues); 2505-2507 (F. & M. disease); 2512 (Aujeszky's disease); 2513-2517 (rabies); 2521 (canary-pox); 2526 (equine rhinopneumonitis); 2529-2530 (African horse sickness); 2534 (serological differentiation of rinderpest and mucosal disease by agar-gel diffusion); 2535 (virus diarrhoea vaccine for cattle); 2540 (gel-diffusion test in swine fever); 2542 (African swine fever); 2547-2556 (Teschen disease); 2560 (canine virus hepatitis); 2565-2568 (Newcastle disease); 2640 (*Dictyocaulus viviparus* vaccine).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Tarshis, I. B. (1961). **Laboratory and field studies with sorptive dusts for the control of arthropods affecting man and animals.**—Exp. Parasit. 11, 10-33. 2592

A synthetic silica aerogel (SG 67), a mixture of 95.3% silica aerogel plus 4.7% ammonium fluosilicate impregnated as a less than monomolecular layer on the internal surfaces of the porous particles, was very effective in killing by desiccation cockroaches; cat, rat and human fleas; ticks (*Otobius megnini*, *Rhipicephalus sanguineus*); cattle lice (*Haematopinus* spp.); bugs (*Cimex lectularius*, *Triatoma protracta*); house-flies (*Musca domestica*); mites (including *Dermanyssus gallinae* and *Ornithonyssus sylviarum*); mosquitoes (*Culex tarsalis*), etc. Affected arthropods lost 23-68% of their body weight by dehydration, and death usually occurred within 12 hours. The fluosilicate induces a strong positive charge to the particles, enabling them to adhere very well to the bodies of pests and their hosts, and to steel, wood, etc. SG 67 has now been successfully used in houses, hotels, ships, zoos, museums, etc.—W. N. BEESLEY.

Weintraub, J. & Thompson, C. O. M. (1961). **Comparison of Ronnel, Dowco 109, and Dowco 105 for systemic control of cattle grubs in Alberta.**—J. econ. Ent. 54, 79-84. 2593

Subcutaneous injection of Dowco 109 emulsion at 15 mg./kg. against internal warble larvae and oral drench of Dowco 105 wettable powder at 25 mg./kg. against hypoderma larvae were both better treatments than the recommended ronnel (Dow ET-57) boluses at 110 mg./kg.; 0.75% Dowco 109 spray and s/c

inj. of Dowco 109 (5 mg./kg.) or Dowco 105 (25 mg./kg.) were all ineffective. Insecticide breakdown exceeded its accumulation in some of the cattle which received Dowco 109 as a feed additive or intramuscular injection, leading to poor control. Ataxia occurred in some of the animals treated orally with ronnel or subcutaneously with Dowco 109 at 15 mg./kg., possibly due to the death and disintegration of the warble larvae.

—W. N. BEESLEY.

Weintraub, J., McGregor, W. S. & Brundrett, H. M. (1961). **Artificial infestations of the northern cattle grub, *Hypoderma bovis*, in Texas.**—J. econ. Ent. 54, 84-87. 2594

Hypoderma bovis does not occur in Texas, although it recently spread into Oklahoma and Southern California. Warbles from cattle imported into Texas were collected and the emerging flies induced to fly and mate by tethering them with cotton threads. Calves were each infected with 50, 100, 200, 500 or 1,000 eggs. While 29% of the larvae matured from batches of 50 eggs, only 6% survived from 500 eggs. This loss was attributed to either the infertility or mortality of the eggs because of the high air temperature (maxima of about 90°F.).—W. N. BEESLEY.

Roth, A. R. & Eddy, G. W. (1961). **Field tests with new cattle grub systemics.**—J. econ. Ent. 54, 203-204. 2595

Co-Ral, Ruelene, Bayer 29493 and Bayer 22408 were power-sprayed on cattle at 250-300 lb./sq. inch several weeks before *Hypoderma bovis* and *H. lineatum* encysted in the backs. Bayer 29493 at 0.25% and Ruelene

at 0.5–0.75% gave 90–100% control, and 0.5% Co-Ral 75–86% control, but 0.75% Bayer 22408 was relatively ineffective.

—W. N. BEESLEY.

Khan, M. A. (1960). Application of Co-Ral for systemic control of cattle grubs *Hypoderma lineatum* (De Vill.) and *H. bovis* (L.).—Canad. J. anim. Sci. 40, 114–118. [Author's abst. modified.] 2596

Sprays of 0.5% w/v Co-Ral (Bayer 21/199) wettable powder (WP) in water applied to the entire body of unweaned calves in September reduced warble infestation by 99.5% and gave much better control than similar treatments with Co-Ral emulsifiable concentrate (EC) or WP in October. Back spraying in October with 0.75% EC was as effective as similar all-over sprays applied at the same time or 0.5% WP sprayed over-all 6 weeks earlier. There was little difference in efficacy between WP and EC.

A recurrence of shipping fever was noticed in the herd sprayed soon after weaning and shipping. This condition was not observed in calves sprayed before weaning. Clinically none of the treated calves showed any cholinergic signs of organophosphate poisoning.

Simco, J. S. & Lancaster, J. L., Jr. (1961). Control of cattle grubs and horn flies by summer dipping with Co-Ral.—J. econ. Ent. 54, 208–209. 2597

A dip containing 0.25% Co-Ral (as wettable powder) gave good control of the cattle horn fly, *Siphona* (*Lyperosia*) *irritans*, for up to 3 weeks. Animals dipped in Co-Ral two or three times during the summer developed very few warbles in the following February, comparable with the result from using a 0.5% Co-Ral spray. The 2,000 gal. dipping tank was open and the Co-Ral concentration was therefore carefully adjusted before each operation.—W. N. BEESLEY.

Tapernoux, A. & Magat, A. (1960). L'insecticide systémique Bayer L 13/59 est-il éliminé par le lait des vaches traitées contre l'hypodermose? [Is *Dipterex* excreted in the milk of cows treated for warble-fly control?]—C. R. Soc. Biol., Paris 154, 359–361. 2598

Milk was taken from a cow before and 20 hours after skin application of over twice the recommended strength of *Dipterex*. There was no difference in the phosphorus content of the samples, and no change in the taste and odour of the milk was noticed.—M.G.G.

Smith, I. M. & Rennison, B. D. (1961). Studies of the sampling of *Glossina pallidipes* Aust. I. The numbers caught daily on cattle, in Morris traps and on a fly-round. II. The daily pattern of flies caught on cattle, in Morris traps and on a fly-round.—Bull. ent. Res. 52, 165–182 & 183–189. [Authors' summaries modified.] 2599

I. Two experiments in which *G. pallidipes* was caught on oxen, in Morris traps and on a fly-round in south-eastern Uganda are described.

Fewer flies were caught in traps than on oxen, but the former took a higher proportion of females. A white ox attracted fewer flies than darker-coloured oxen, among which a red ox was the most attractive.

The numbers caught by the various methods were, in general, not correlated and this casts doubt on the validity of fly-round or trap data as estimates of the number of *G. pallidipes* likely to attack cattle.

II. A series of catches of *G. pallidipes* was made in 1½-hour periods throughout each day during two experiments in the early wet season (1957) and the late dry season (1958) in Uganda, using tethered, small, short-horned East African zebu oxen, Morris traps and the standard fly-round technique.

Flies were attracted to the oxen in greater numbers in the morning and evening than at midday, the evening increase being marked in the wet season. The daily catches of both sexes on oxen, though starting at much the same level in both seasons, fell to lower levels at the hotter times of day during the dry season and rose only slightly in the evening. Traps, on the other hand, in both seasons caught most females between 1230 and 1400 hr. and least in the mornings. Male flies were trapped in greatest numbers between 1400 and 1530 hr. in the wet season, but only in comparatively small numbers at any time in the dry season. During the dry season, catches on the fly-round and on oxen showed a similar periodicity in the case of females, but not in that of males.

Reid, J. A. (1961). The attraction of mosquitos by human or animal baits in relation to the transmission of disease.—Bull. ent. Res. 52, 43–62. [Author's summary modified.] 2600

Experiments were made in Malaya between 1952 and 1957 to compare the numbers of mosquitoes attracted to man, calf or goat under the same conditions.

The total mosquitoes caught with each

bait showed calf to be the most attractive, followed by goats and then men. However, there were three species, the dark-winged form of *Anopheles barbirostris*, *Aedes albopictus* and *Culex pipiens fatigans* that were attracted in larger numbers to man than to calf, and six species attracted in larger numbers to man than to goat.

To compare the host preferences of the different species as between man and calf, the numbers of each caught with man and with calf have been expressed as a ratio (the man : calf attraction ratio).

The ratios range from 3.4 : 1 in favour of man for the dark-winged form of *Anopheles barbirostris* to 1 : 82 in favour of calf for *A. vagus*.

de Cabrier da Silva, H. R. B. (1960). Prospeção parasitológica em Timor. Subsídios para o estudo da fauna parasitológica dos seus animais domésticos. [**Parasites of domestic animals on Portuguese Timor.**] pp. 117. Lisbon: Junta de Investigações do Ultramar. [Estudos, ensaios e documentos No. 76.] 45\$00. [In Portuguese. Summaries in English and French.] 2601

The author collected 25 species of arthropod, helminth and protozoan parasites of domestic mammals and birds in Portuguese Timor. He considers that all were brought there by domestic animals and suggests that precautions should be taken against the accidental introduction of any more. The ixodid fauna of the different islands of the Indonesian archipelago and of Australia was reviewed.—M.G.G.

Anon. (1961). **Cattle fever tick eradication.**—Proc. 64th Ann. Meet. U.S. Livestock Sanit. Ass., Charleston, 1960 pp. 188-191. 2602

In one part of Florida, *Boophilus microplus* was found on cattle in 1957 and was believed to have been eradicated the following year. But the tick re-appeared in the same area in May 1960 and plans to eradicate it and prevent its spread are in operation. *Rhipicephalus evertsi* was found in Florida in 1960 [see also *V.B.* 31, 1157].—R.M.

Loomis, E. C. (1961). **Life histories of ticks under laboratory conditions (Acarina: Ixo-**

didæ and Argasidae).—J. Parasit. 47, 91-99. [Abst. from author's summary.] 2603

Colony rearing techniques are described for the ixodid species *Amblyomma americanum* and *Dermacentor andersoni* and the argasid species *Ornithodoros coriaceus*, *O. moubata*, *Argas persicus*, and *Otobius megnini*. The 2-year life cycle of ixodid species was reduced to a minimum of 2.3 to 3 months under laboratory conditions.

A convenient technique for feeding larvae of *A. persicus* on birds is described. The life cycle of this species was between 7 and 8 weeks under laboratory conditions.

Ishihara, K. & Suganuma, Y. (1961). [**Neguvon treatment of demodectic mange in dogs.**] —J. Jap. vet. med. Ass. 14, 45-48. [In Japanese. Summary in English.] 2604

Demodectic mange in dogs was successfully treated by repeated application of 0.3-1% Neguvon soln., followed by 2% Neguvon ointment with or without sulphur. There were no harmful side effects since the lethal dose was stated to be 200-500 mg./kg. body weight.—E.G.

Nutting, W. B. & Rauch, H. (1961). **The effect of biotin deficiency in *Mesocricetus auratus* on parasites of the genus *Demodex*.**—J. Parasit. 47, 319-322. [Authors' summary modified.] 2605

Biotin deficiency in the golden hamster occasions a marked decline in numbers of the ectoparasites *Demodex criceti* and *Demodex* sp. In severe deficiency only a few living immature stages of the ectoparasites were found. These were in the hair follicle.

It is suggested that physical disturbance of the mites' habitat, especially keratinization of the epidermis and upper part of the hair follicle, is responsible for their depletion.

Hughes, A. M. (1961). **The mites of stored food.**—Tech. Bull. Minist. Agric., Lond. No. 9 pp. 287. [London: H.M. Stat. Off.] 17s. 6d. 2606

This is a guide to the identification of mites of the suborders Sarcoptiformes, Trombidiformes and Parasitiformes. It does not deal with possible harmful effects of mite-infested food on animals.—R.M.

See also absts. 2502 (leucocytozoon in fowls transmitted by *Culicoides*); 2624 (insects as hosts for *Ancylostomum caninum*).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

Pearson, E. G. & Boray, J. C. (1961). **The anthelmintic effect of the intramuscular injection of carbon tetrachloride on *Fasciola hepatica* in cattle.**—Aust. vet. J. 37, 73-78. [Authors' summary modified.] 2607

Intramuscular injection of 1 ml. per 20 lb. body wt. (maximum dose 30 ml.) was suitable for control of liver fluke and was at least 90% efficient in most of the cattle treated. Lower doses were unreliable. No toxic effects were observed in 315 cattle.

Bühner, F. (1961). Weitere Erfahrungen über die parenterale Leberegeltherapie, insbesondere die koprologische und klinische Kontrolle der Ursodistolwirkung. [**Parenteral treatment of fascioliasis with Ursodistol, a carbon tetrachloride compound.**]—Mh. VetMed. 16, 140-142. 2608

This compound was stated to contain two parts of carbon tetrachloride to one part of a mixture of unspecified solvent and pain-reducing substances. It was injected subcutaneously into about 1,000 infested sheep and it was claimed to be highly effective and well tolerated.—E.G.

Ehrlich, I., Forenbacher, S., Rijavec, M. & Kurelac, B. (1960). Istraživanja o akutnoj metiljavosti. II. O utjecaju atebri na migracioni stadig velikog metilja u organizmu goveda i o mogućnostima liječenja akutne metiljavosti atebriinom. [**Studies on acute fascioliasis. II. Action of mepacrine on migrating flukes in cattle.**]—Vet. Arhiv 30, 307-313. [In Croat. Summaries in English and German.] 2609

Twenty-two liver fluke-infested cattle were given 1-2 i/v doses of a 30% soln. of mepacrine in either distilled water or 25% glucose, at intervals of 3-5 days. Doses of 5-10 mg./kg. body wt. were well tolerated, doses of 15-25 mg. produced vagotomy of short duration and varying intensity. In ten cows, slaughtered 2-10 days after commencement of treatment, immature flukes in the bile ducts were dead, but those in the peritoneal fluid were seemingly unaffected by the drug. Migration appeared to have stopped after commencement of treatment. Nine of the remaining 12 cows, kept under observation for 6 months, were considered cured.—E.G.

Bogdan, J., Kočiš, J. & Pauer, T. (1961). Hodnotenie príčin smrti pri fasciolóze malých prežúvavcov. [**Fascioliasis as cause of death**

in small ruminants.]—Vet. Čas. 10, 132-139. [In Slovak. Summaries in German and Russian.] 2610

Fascioliasis was diagnosed P.M., either alone or together with other parasitic or bacterial diseases in 61 sheep, 12 goats and 3 moufflons. Losses were high during autumn and winter from acute traumatic liver fluke hepatitis. In the chronic stage the cause of death was generally cirrhosis of the liver, often complicated by nervous symptoms. Of secondary parasitic infestations lungworm infestations accounted for a considerable and staphylococcal, streptococcal or pasteurella infection, for a minor proportion of losses.

—E.G.

Kotrly, A., Hanzal, L. & Erhardová, B. (1961). Použití pentachlorofenolátu sodného na hubení plžů — Mezihostitelů motolic. Předběžná zpráva. [**Sodium pentachlorophenate for the control of liver-fluke snails.**]—Vet. Čas. 10, 128-131. [In Czech. Summaries in English, German and Russian.] 2611

Various species of snails including *Limnaea* and *Succinea* spp. in a marshland area of 3 hectares [about 7.5 acres] were destroyed by pressure spraying with sodium pentachlorophenate. The 0.2% soln. used in the mechanical sprayers was prepared from 45 kg. of a 4.4% soln. No live snails were seen 1, 3 and 21 days after spraying. It appeared to be harmless for free-living birds and mammals.—E.G.

Condy, J. B. (1960). **Bovine schistosomiasis in Southern Rhodesia.**—Cent. Afr. J. Med. 6, 381-384. 2612

Adult schistosomes were found in the mesenteric veins of 1,735 out of 2,509 cattle. Eggs were present in lesions in the urinary bladder, also in ovaries, Fallopian tubes and once in the uterus. Lesions are described and measurements of eggs (similar in shape to those of *S. matthei*) are given. The disease is not considered of great economic significance in Rhodesia but it is stated that "a serious consequence bovine schistosomiasis might possibly cause is infertility". The public health aspect of bovine schistosomiasis is discussed.—T.E.G.R.

Bondareva, V. I., Boev, S. N. & Sokolova, I. B. (1960). [**Susceptibility of domestic and wild animals to coenurosis.**]—Helminthologia

2, 224-234. [In Russian. Summaries in English, French and German.] 2613

81 animals of 11 wild and domestic species were each dosed with 500 onchospheres of *Taenia multiceps*. The results indicated that, apart from sheep, the animals most susceptible to cerebral localization of the coenurus were antelopes (*Saiga tatarica*), gazelles (*Gazella subgutturosa*), wild sheep (*Ovis ammon*), Siberian wild goats (*Capra sibirica*) and domestic cattle, in decreasing order of susceptibility. Nervous symptoms were similar to those seen in sheep. The following resisted attempts to infest: deer (*Cervus elephas canadiensis* and *Capreolus capreolus*), donkeys, and domestic and wild pigs.—R.M.

Powers, L. E. & Churchill, C. W. (1959).

Bibliography of echinococcosis with selected abstracts. pp. 209. Beirut: American University. 2614

This is a comprehensive, though not exhaustive, bibliography of echinococcosis. It is divided into sections on the characteristics of the agent, epidemiology, immunology, pathology, diagnosis, treatment, and prevention and control. In all there are 763 references, about half of which are accompanied by an abstract reprinted from *Trop. Dis. Bull.*, *Vet. Bull.*, *Weybridge*, or *Biol. Abstr.*, or by a reference to an abstract in *Helminth. Abstr.* The titles of all references in foreign languages are followed by an English translation. An author index, a geographical index, and a list of the periodical publications from which the references were drawn are appended.—M.G.G.

Kilejian, A., Schinazi, L. A. & Schwabe, C. W.

(1961). **Host-parasite relationships in echinococcosis. V. Histochemical observations on *Echinococcus granulosus*.** — *J. Parasit.* 47, 181-185. 2615

Histochemical observations were made on the distribution of glycogen, acid and alkaline phosphatases, and DNA in larval and adult stages of *E. granulosus*.—R.M.

Gemmell, M. A. & Brydon, P. (1960). **Hydatid disease in Australia. V. Observations on hydatidiasis in cattle and pigs in New South Wales and the economic loss caused by the larval stage of *Echinococcus granulosus* (Batsch 1786) (Rudolphi 1801) in food animals in Australia.** — *Aust. vet. J.* 36, 73-78. 2616

Where sheep rearing is the chief pastoral

industry, the incidence of hydatid disease in cattle and pigs is similar to that in sheep, and the annual increment of infection in these three species appears to depend on climatic conditions favouring the survival of echinococcus ova on pastures. In areas where sheep are not commonly reared there are two different annual increments in cattle. In the more sparsely settled areas where there is a sylvatic cycle in the dingo, kangaroos and wallabies, cattle are accidental hosts and the incidence of hydatid cysts in them is similar to that in cattle and sheep-rearing districts with similar climatic conditions. In closely settled areas where dairying is practised and where pig rearing is incidental, cysts in cattle are much less common and most of them are sterile. In such areas pigs may play some part in maintaining the parasite. However, very few pigs are slaughtered on farms but are taken to abattoirs where there is little opportunity for dogs to have access to their offal.

Economic loss from condemnation of carcasses and offal does not exceed £600,000 per annum for Australia and is not of serious significance.

The incidence of hydatid cysts in cattle and pigs in different districts is tabulated.

—H. MCL. GORDON.

Holmes, J. C. (1961). **Effects of concurrent infections on *Hymenolepis diminuta* (Cestoda) and *Moniliformis dubius* (Acanthocephala).**

I. General effects and comparison with crowding.—*J. Parasit.* 47, 209-216. 2617

In rats infested with both *H. diminuta* and *M. dubius*, or with large numbers of a single species, worms were shorter and thinner than in rats lightly infested with one species. In concurrent infestations *H. diminuta* was limited to the posterior part of its intestinal range and *M. dubius* to the anterior part of its range.—M.G.G.

Turner, J. H. & Wilson, G. I. (1961). **Experimental strongyloidiasis in sheep and goats.**

V. The effect of certain environmental conditions and chemicals on the infective larvae of *Strongyloides papillosus*. — *J. Parasit.* 47, 30. 2618

Larvae died 5 min. after desiccation from aqueous suspension at 22°C. They were killed by freezing for 24 hours and only 78% survived exposure to 3° for 24 hours. Direct sunlight on moist larvae for 1 or 2 hours rendered 97% non-motile. Larvae were killed by immersion for 4 min. in 1% Lysol, 1%

thymol or 10% copper sulphate solutions.

—R.M.

Jansen, J., Jr. (1961). Over de nomenclatuur van de trichostrongyliden en de trichostrongylose bij de Nederlandse huisdieren. [Nomenclature of trichostrongylids and trichostrongylosis in domestic animals in the Netherlands.] — Tijdschr. Diergeneesk. 86, 248-254. [In Dutch. Summaries in English, French and German.] 2619

The trichostrongylid parasites of domestic animals in the Netherlands are listed and described. *Sjobergia* is considered to be synonymous with *Skrjabinagia*, *Cooperia mcmasteri* with *C. surnabada*. The name *Ostertagiella* should be rejected. The name of the subfamily Cooperiinae is substituted by Trichostrongylinae and includes *Cooperia*, *Cooperioides* and *Paracooperia*. The name trichostrongylosis is proposed for infestation with any of the trichostrongylid worms with the exception of infestation with *Haemonchus contortus* and *Nematodirus* spp., for which haemonchosis and nematodiosis are recommended.—E.G.

Gupta, S. P. (1961). The effects of ultraviolet radiation on the infective stages of *Trichostrongylus retortaeformis* Zeder (Nematoda). —Canad. J. Zool. 39, 137-142. [Author's abst. modified.] 2620

The far range of ultra-violet (from 2,800 Å) has a quickly lethal effect on the larvae, the middle ultra-violet much less and the near ultra-violet (3,800-3,200 Å) practically none. Larvae not killed by the ultra-violet radiation develop normally in rabbits.

Symons, L. E. A. (1961). Pathology of infestation of the rat with *Nippostrongylus muris* (Yokogawa). VI. Absorption in vivo from the distal ileum.—Aust. J. biol. Sci. 14, 165-171. [Author's summary modified.] 2621

The net fluxes of water, sodium, and chloride and the absorption of glucose were measured in the distal ileum of rats infested in the jejunum with *N. muris*. The rate of net fluxes of water and chloride was not affected, the rate of absorption of glucose and probably sodium was increased, and the dry weight of the distal ileum per unit length was unchanged by the infestation. It was concluded that malabsorption is not of major importance in nippostrongylosis of rats.

Gardiner, M. R. & Fraser, D. (1960). Canine hookworm disease in south western Australia. —Aust. vet. J. 36, 405-407. 2622

Ancylostoma caninum and *Uncinaria stenocephala* were recorded from dogs in Western Australia for the first time. Heavy infections occurred in a pack of hounds and there were some deaths. Lesions are described in some detail.—H. MCL. GORDON.

Cohen, R. H. (1961). Clinical evaluation of an injectable iron preparation for the treatment of anemia in hookworm-infected dogs. —J. Amer. vet. med. Ass. 138, 94-96. [Abst. from author's summary.] 2623

Clinical studies using an injectable iron preparation for treatment of anaemia in pups, caused by haemorrhage due to hookworm infection. Of the 23 treated pups, 3 died; of the 18 control pups, 11 died.

Little, M. D. (1961). Observations on the possible role of insects as paratenic hosts for *Ancylostoma caninum*.—J. Parasit. 47, 263-267. [Abst. from author's summary.] 2624

The author's observations indicated that insects such as cockroaches may be paratenic hosts for *A. caninum* and thus serve as sources of infection, especially for cats. Attempts to find larvae of *A. caninum* in cockroaches have not yet succeeded, although cockroaches were found to be infected with *Gongylonema* and *Moniliformis*.

Shikhobalova, N. P. & Paruzhinskaya, L. S. (1960). [Action of ionizing radiation on eggs of *Trichocephalus muris*.]—Trudy gel'mint. Lab. 10, 248-253. [In Russian.] 2625

T. muris eggs were irradiated with a dose of 2,000-200,000 roentgens. The development of embryos in eggs exposed to 2,000-5,000 r resembled that in untreated eggs, but at 10,000 r development was delayed, at 40,000 r only 1.7% of embryos reached the invasive stage, and at 100,000 r no embryos developed.—M.G.G.

Vetter, R. L., Pope, A. L., Todd, A. C. & Hoekstra, W. G. (1960). Demonstration of a factor in alfalfa hay required for egg production by the stomach worm of sheep.—J. Anim. Sci. 19, 1298. 2626

The feeding of a semi-purified diet reduced the faecal egg count in sheep infected with *Haemonchus contortus*: the feeding of lucerne hay reversed the effect. After lowering the faecal egg count by feeding a modified basal ration it was found that an

increase followed the feeding of the residue after water or ethanol extraction of lucerne. An alkaline extract of lucerne hay produced a similar response. Feeding a crude fibre preparation, a water extract of lucerne, rumen fluid concentrate of sheep fed on lucerne hay or lucerne ash did not increase the egg production.—T. E. GIBSON.

Folse, D. S. (1961). **Phenothiazine: an annotated bibliography through 1958.**—Tech. Bull. Kansas State Univ. No. 115. pp. 216. 2627

An annotated list of 1586 references covering the period 1934 to 1958. The references for each year are listed separately. There are also useful author and subject indexes.—E.G.

Anon. (1961). **Phenothiazine resistance.**—Proc. 64th Ann. Meet. U.S. Livestock Sanit. Ass., Charleston, 1960 pp. 191-192. 2628

The Committee on parasitic diseases of the Livestock Sanitary Association emphasized that so far only certain strains of one nematode (*H. contortus*) have proved resistant to phenothiazine. Apparent failures of the anthelmintic should not be attributed to resistance without thorough investigation of each case.—R.M.

Banks, A. W. & Korthals, A. (1960). **The anthelmintic efficiency of phenothiazine and of bephenium in sheep.**—Aust. vet. J. 36, 383-386. 2629

"Highly purified" phenothiazine given as a standard dose of 15 g. per sheep, was 87% efficient against *Trichostrongylus* spp. (intestinal species), 67% against *Ostertagia* spp., 95% against *T. axei*, 84% against *Nematodirus* spp. and 88% against immature worms (not differentiated into species) in the small intestine. It had no significant effect on immature worms in the abomasum. Bephenium hydroxynaphthoate given as a standard dose of 5.4 g. was 55% efficient against *Trichostrongylus* spp. (intestinal species), 75% against *Ostertagia* spp. and 88% against *Nematodirus* spp., but there was no significant reduction of *T. axei* or the immature worms in the abomasum and small intestine. The anthelmintics were administered by mouth, the phenothiazine with an oesophageal tube, the bephenium compound with a dose syringe. Anthelmintic activity was determined by comparison of worm

burdens in treated and control sheep slaughtered 8 days after treatment.

—H. McL. GORDON.

I. Walley, J. K. (1961). **Methyridine—a new anthelmintic for sheep and cattle.**—Vet. Rec. 73, 159-167 & 168. 2630

II. Broome, A. W. J. (1961). **Preliminary observations on the mode of action of methyridine.**—Ibid. 168 & 169. 2631

III. Hamilton, J. (1961). **Some observations on the use of methyridine in the field.**—Ibid. 169-170 & 171. 2632

IV. Gracey, J. F. & Kerr, J. A. M. (1961). **Some observations on the action of methyridine in lambs.**—Ibid. 171-172. 2633

I. In tests using 491 sheep and 435 cattle for evaluation of the anthelmintic activity of 2-(β -methoxyethyl) pyridine, (methyridine), criteria of efficiency were: P.M. findings in some; changes in the faecal egg counts of the remainder of the animals. The detailed tables of results show methyridine to have a wide range of activity. Against worms in the small intestine—species of *Ostertagia*, *Trichostrongylus*, *Cooperia* and *Nematodirus*—activity was consistently high. It was also high against *Trichuris* spp. in the large intestine. In the abomasum activity was generally satisfactory but was irregular and in some tests very low. The drug has some activity against lungworms, *Dictyocaulus* spp., but is ineffective against liver flukes and coccidia. High activity was also recorded against immature worms. Methyridine may be given orally or by subcutaneous injection, the optimum dose being 200 mg. per kg. Reaction at the site of injection sometimes followed the use of the subcutaneous route and it is suggested that injections should not be made in the region of joints. Doses of 400 mg. per kg. have caused death in cattle and sheep but 300 mg. per kg. caused only slight transient depression.

II. After oral or subcutaneous administration methyridine reaches all parts of the gut with higher concentrations in the stomach following oral doses. The drug itself not one of its metabolites is the active material. It passes from the gut to the blood and *vice versa* according to the concentration gradient, and activity depends on the concentration in the blood and not on the rate at which food passes along the gut. The drug comes into contact with the worms whether they are embedded in the mucosa or on the surface which probably accounts for its wide

range of activity. Its lower, and variable, activity in the stomach is probably related to different levels of gastric acidity.

III. Hamilton treated 27 cattle on different farms with methyridine given s/c at 200 mg. per kg. Although these cattle were severely ill at the time of treatment almost all made excellent clinical recoveries and faecal egg counts were reduced either to zero or to a low level. The drug was also used in a few sheep but the results, whilst satisfactory, were not so spectacular as in cattle. Local reactions were seen in one cow and one sheep.

IV. Forty lambs were treated with methyridine given s/c at 200 mg. per kg. and compared with 40 untreated controls. A spectacular reduction in worm egg count followed treatment. Six control and eight treated animals were slaughtered and their average worm burdens were respectively 6,000 and 412. These worm counts showed that the major burden of species of *Trichostrongylus*, *Strongyloides* and *Ostertagia* was markedly reduced, whilst lighter infections of *Cooperia*, spp., *Haemonchus contortus* and *Bunostomum* spp. were completely eliminated. No toxic effects were seen in the treated sheep, but abscess formation occurred at the site of injection in one sheep. The treated sheep gained more weight than the controls.

—T. E. GIBSON.

I. Young, J. (1961). **Observations on the use of methyridine as an anthelmintic in practice.** —*Vet. Rec.* 73, 192 & 193. 2634

II. Macrae, R. R. (1961). **A clinical evaluation of methyridine in normal veterinary practice.** —*Ibid.* 193-195. 2635

III. Groves, T. W. (1961). **A summary of anthelmintic and toxicity results from field trials with methyridine.** — *Ibid.* 296-201. [Authors' summaries modified.] 2636

I. All animals, except where noted, were treated by subcutaneous injection of methyridine at 10 ml. per 1 cwt. body wt. (200 mg./kg.). Of 80 clinical cases of gastro-intestinal parasitism in sheep treated, most were advanced cases. All had been treated previously with other anthelmintics without effect and all made satisfactory recovery after a single injection of methyridine. No side- or any ill-effect was observed. Three hundred and forty-three ewes and lambs moderately parasitized were also treated successfully.

Thirty-one cases of severe parasitic enteritis in calves showed extremely satis-

factory results within 5 days of injection. Although some animals were *in extremis* no harmful effects followed careful treatment.

II. In field trials with methyridine against severe helminthiasis in 57 cattle in 6 herds and in 3 flocks of sheep, results were uniformly beneficial with a reduction in faecal egg count and an improvement in appetite and general condition. Slight swellings were noted at the site of injection in cattle where the total dose of drug was given in a single injection.

III. From trials involving over 2,500 cattle and sheep conducted by private practitioners and other workers at 38 centres, and field toxicity trials on a further 630 animals, evidence is presented of the safety and efficacy of methyridine administered subcutaneously at 200 mg. per kg. in the treatment of acute parasitic gastro-enteritis of cattle and sheep.

The drug is well tolerated, although sometimes it causes a local reaction at the site of injection. Clinical response to treatment is rapid even in severe cases. The anthelmintic effect is shown to be marked against nematodes of the abomasum, small intestine, and large intestine, and some activity is suggested against nematodes of the lung.

Southcott, W. H. (1961). **Toxicity and anthelmintic efficiency of "Neguvon" for sheep.** — *Aust. vet. J.* 37, 55-60. [Author's summary modified.] 2637

Neguvon was highly effective against *H. contortus* and safe for sheep at dose rates of about 2.5 g. per 100 lb. live weight. At this and at higher dose rates some effect was also observed against *Ostertagia* spp. No useful effect was demonstrated against *Trichostrongylus* spp. or *Oesophagostomum* spp. at dose rates of 2.5 g. per 100 lb., or 5.0 g. or more per 100 lb.

I. Meldal-Johnson, C. M., Muller, G. L. & Thomas, R. J. (1960). **The use of a "Neguvon-Asuntol" mixture as an anthelmintic for sheep.** — *J. S. Afr. vet. med. Ass.* 31, 235-241. 2638

II. Stampa, S. (1960). **The control of internal parasites of cattle with a 10 : 1 mixture of Neguvon and Asuntol.** — *Ibid.* 243-249. [Authors' summaries modified.] 2639

I. A mixture of ten parts of Neguvon and one of Asuntol was highly effective against *Haemonchus* and *Trichostrongylus* species at a dose of 50 mg. per kg. and

against *Cooperia*, *Ostertagia* and *Nematodirus* species at 77–110 mg. per kg. in all cases following pre-stimulation with copper sulphate. The higher dose is, however, rather close to the toxic dose and 50 mg. per kg. is the normally recommended dose. It was effective against *Bunostomum trigonocephalum* at 77 mg. per kg., but not against *Chabertia*, *Oesophagostomum* or *Strongyloides* species.

The range of activity is thus similar to that of micro-fine phenothiazine and offers a useful alternative to phenothiazine, its chief limitations being the necessity for pre-stimulation, and a lack of activity against *Oe. columbianum*. In view of the variations in toxicity of organic phosphorus compounds, some caution is necessary until more evidence is available regarding the factors which affect toxicity.

II. The 10 : 1 mixture at 40 mg./kg. was effective against *Haemonchus*, *Trichostrongylus*, *Cooperia* and *Oesophagostomum*. *Bunostomum* was controlled by 60 mg./kg. Premedication with sodium bicarbonate did not influence its efficacy. The remedy was well tolerated under a variety of conditions, but appeared to be more toxic for cattle kept on dry grass pasture.

Cornwell, R. L. (1961). **Observations on calves vaccinated with irradiated larvae of *Dictyocaulus viviparus*. Serum antibody titre, respiratory rate and response to challenge.**—*J. comp. Path.* 71, 191–200. 2640

Twenty-six calves on 4 farms were vaccinated with two doses of irradiated larvae at a four-week interval. On one farm, where the respiratory rate was raised by "virus pneumonia", no further rise followed vaccination. On the other three, 10 of the 14 vaccinated animals had an increase in respiratory rate 2–3 weeks after the first dose of irradiated larvae. It was considered that an elevated respiratory rate after vaccination probably indicated the establishment of worms in the lungs which would be followed by immunity, which should be reflected by a rise of c.f. antibody titre after the second dose of irradiated larvae. Although the serum titre of the vaccinated animals ten weeks after the first dose of larvae varied from 0 to 480 there was no correlation between titre and the respiratory rate observed earlier. Four vaccinated animals were challenged with 5,000–10,000 infective lungworm larvae. All

developed patent infections and excreted small numbers of larvae and had an increase in respiratory rate. This demonstrates that vaccinated animals are capable of acquiring light infections of lungworms and may endanger non-vaccinated stock grazing with them.—T. E. GIBSON.

Simůnek, J. (1960). Zur Methodik der Wirkungsprüfung von Lungenwurmmitteln. [**Technique of testing the efficacy of lungworm drugs.**] — *Angew. Parasit.* 1, 12–18. [Summaries in English and Russian. English summary modified.] 2641

Preliminary experiments indicated that the action of cyanacethydrazide on *Ascaris* worms *in vitro* was analogous to its action on *Dictyocaulus*. It was possible that *Ascaris* could be used for screening drugs for activity against lungworms.—R.M.

Vodrážka, J. (1960). Ein Vergleich von Diaethylcarbamazin und Cyanacethydrazid an diktyokaulösen Jungtieren mittels der Methode der totalen Tracheotomie. [**Evaluation of diethylcarbamazine and cyanacethydrazide against lungworms in calves by tracheotomy.**] — *Helminthologia* 2, 189–196. [In German. Summaries in English, French and Russian.] 2642

A gauze bag for collecting worms expelled from the lungs was connected to the trachea of 33 calves with moderate to severe husk. Diethylcarbamazine at a daily dose of 20 mg./kg. was then given i/m to 18 calves for 3 days; 3,011 (67·8%) of 4,438 lungworms were expelled within about a week. Cyanacethydrazide at a daily dose of 15 mg./kg. was given s/c to 15 calves for 3 days; 3,837 (65·5%) of 5,854 lungworms were expelled.—M.G.G.

Vodrážka, J. (1961). Hodnotenie protidiktyokaulóznei účinnosti cyánacethydrazidu u dobytky s použitím kritického testu. [**A critical test for evaluation of cyanacethydrazide against *Dictyocaulus* infestation in cattle.**] — *Vet. Čas.* 10, 196–205. [In Slovak.] 2643

Three s/c injections each of 15 mg./kg. body wt., of a 20% soln. of cyanacethydrazide, expelled about 65% of *Dictyocaulus* spp. harboured by 15 young cattle, weighing 98–250 kg.—E.G.

Kelley, G. W., Jr. & Krous, D. (1961). **Intravenous inoculation of third-stage larvae of**

Metastrongylus spp. and implantation directly into swine lungs.—J. Parasit. 47, 232. 2644

Two six-week-old piglets, reared free from lungworms were each given about 2,000 third-stage larvae of *Metastrongylus* spp. In one they were injected i/v and in the other they were introduced into the trachea. Numerous adult lungworms were found in the pigs when killed after 27 days. This was taken as evidence that the third-stage larvae do not require the action of gastric juice or intestinal secretions before they can infect.—R.M.

Zmoray, I. & Švarc, R. (1960). Beitrag zur Kenntnis der morphologischen Veränderungen der höheren Larvenstadien von *Protostrongylus rufescens* in Beziehung zu seiner Epizootologie. [Morphology of larvae of *Protostrongylus rufescens* and epidemiology.] — *Helminthologia* 2, 209-223. [In German. Summaries in English, French and Russian.] 2645

Nine species of snails were infected experimentally with first stage larvae of *P. rufescens*. The larvae developed twice as fast in young snails as in old snails, and 30% of the larvae harboured by young snails reached the third stage, compared with only 4% in old snails. The morphology of the third and invasive stages and the exsheathing process were described. The epidemiological implications were discussed.—M.G.G.

Colglazier, M. L. & Enzie, F. D. (1960). I. Anthelmintic trials with hygromycin in pigs. II. Comparative trials with some present-day anthelmintics for swine.—J. Parasit. 46, 796 & 808. 2646

Hygromycin, fed to pigs for 35 days at the rate of 12 million units per ton, removed about 90% of ascarids and about 70% of whipworms. As the results varied between trials, it was concluded that more data are needed on the action of hygromycin.

Four groups of 5 pigs were treated with cadmium oxide (0.015% of the ration for 3 days), sodium fluoride (1% of the dry food for a day), piperazine citrate (50 mg./lb. body wt. in one day), or hygromycin (12 million units per ton for 5 weeks), and one group was left untreated. P.M. examination at the end of 35 days revealed that sodium fluoride, piperazine citrate and hygromycin controlled ascarids and nodular worms, but only hygromycin controlled whipworms.—M.G.G.

Sprent, J. F. A. (1961). Post-parturient infection of the bitch with *Toxocara canis*. — J. Parasit. 47, 284. [Author's note modified.] 2647

A pregnant bitch was infected with 10,000 eggs of *T. canis*. Ten days later six puppies were born. Five were killed at 7, 10, 12, 13, and 17 days, respectively, after birth, and in each instance 100 to 200 larvae from the intestine were placed in a gelatin capsule and administered orally to a series of adult uninfected dogs.

The remaining puppy was kept with the mother until eggs of *T. canis* appeared in its faeces. Eggs began to appear in the faeces of both puppy and the bitch at 31 days after birth of the litter. The bitch passed 227 worms 39 days after the pups were born. The adult dogs to which larvae had been administered, began to pass eggs between 31 and 37 days later.

In all six puppies, larvae were found in the large intestine and hence it is likely that some of the larvae migrating from the lungs do pass out in the faeces. The experiment suggests that between 7 and 17 days after birth of prenatally infected pups, *T. canis* larvae pass into the rectum and are capable, if swallowed, of setting up infection in adult dogs.

Radermacher, F. (1961). Versuche mit der Allgemeinbehandlung der Stephanofilariose ("Sommerwunden") des Rindes mit Antimosan und Neguvon. [Stephanofilarial skin lesions in cattle: systemic therapy with stibophen or Neguvon.]—Inaug. Diss., Hanover pp. 38. 2648

In 42 of 53 cattle in north-western Germany, infected with stephanofilaria, lesions were localized in the udder. One group of 21 was treated at weekly intervals with 3 s/c injections of stibophen, in doses of 0.63 g. per 50 kg. body wt., the total single dose, however, not exceeding 6.3 g. Twelve were cured and seven improved within 2-6 weeks. In 12 there was reduction in milk yield, muscular tremor, malaise and local reactions at the site of injection.

Twenty-five of 32 cattle of group two responded to one oral dose of 60 mg./kg. body wt. of Neguvon. Of the remainder three improved after a second dose 3-4 weeks later.

In six of 16 of the stibophen group and in one of 28 of the Neguvon group there were relapses a year later. Three of six with

relapses were cured after one or more doses of Neguvon and two improved. [See also *V.B.* 29, 3889; 30, 1907.]—E.G.

Healy, G. R. & Kagan, I. G. (1961). **The prevalence of filariasis in dogs from Atlanta, Georgia.**—*J. Parasit.* 47, 290. 2649

The prevalent filaria in dogs in the Atlanta area was *Dipetalonema* sp. and not *Dirofilaria immitis*. In view of the prevalence of *Dipetalonema* in the area and since sera from 24 dogs with and without microfilariae were positive when tested with *D. immitis* antigen, it appears that *D. immitis* antigen cross-reacts with *Dipetalonema*. In 30 dogs *D. immitis* was not found after death, although 10 had microfilariae in the blood. The high incidence of light infections indicated that for determining prevalence, concentration techniques should be used.

—R.M.

Orihel, T. C. (1961). **Morphology of the larval stages of *Dirofilaria immitis* in the dog.**—*J. Parasit.* 47, 251-262. [Author's summary modified.] 2650

Dogs were experimentally infected and killed between 5 and 278 days later. Larvae were recovered from the subcutaneous tissues and muscles during the first 80 days, from the heart and the tissues at 67 to 80 days and from the heart alone after the 90th day.

Sexes are recognizable in the third-stage larvae, and thereafter the stage and the

appropriate age may be reliably estimated on the basis of differentiated reproductive structures, particularly in the female. The male worm can be specifically identified in the early fifth stage. Microfilaraemia consistently becomes evident at about 6.5 months, although morphological studies suggest that microfilariae are liberated into the bloodstream even earlier. [Three plates of illustrations.]

Marquardt, W. C. (1961). **Separation of nematode eggs from fecal debris by gradient centrifugation.**—*J. Parasit.* 47, 248-250. [Author's summary modified.] 2651

A technique is described for isolating eggs of *Nematodirus spathiger*. A suspension of faeces was sieved and allowed to sediment in a cylinder 2 to 6 hours, after which the supernatant fluid was discarded. A sugar gradient was prepared by diluting a 500/360 w/v sucrose solution 1:2, 1:4, 1:6, and 1:8, and layering the solutions in a centrifuge tube. The faeces-water suspension is placed on top of the sugar and the tube centrifuged at 800 g for 20 min. Eggs form a relatively thin layer between the 1:4 and 1:6 layers and may be removed with a fine pipette. When a mixture of ovine nematode eggs was centrifuged in a gradient, they separated into nearly discrete layers. Coccidial oocysts and eggs of *Fasciola hepatica* were found only with the heaviest debris at the bottom of the centrifuge tube.

See also absts. 2559 (hepatic distomatosis and infectious hepatitis in dogs); 2562 (transmission of rabbit fibroma by nematodes); 2784 (report, Jamaica); 2785 (report, Norway); 2788 (book, essentials of nematology).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Marcato, P. S. (1960). **Su un tumore nervoso nel fegato di un bovino. [Nerve tissue tumour in the liver of a cow.]**—*Acta med. vet., Napoli* 6, 495-515. [Summaries in English and French.] 2652

An account is given of primary liver tumours (varying in size up to that of a child's head) in a cow. Histologically, the tumours contained structures similar to those in neurinomas and in neuroblastomas (here referred to as sympathoblastomas).—T.E.G.R.

Parish, W. E. (1961). **A transmissible genital papilloma of the pig resembling condyloma acuminatum of man.**—*J. Path. Bact.* 81, 331-345. [Author's summary modified.] 2653

A papilloma from the preputial diverticulum of two pigs was regularly re-

produced with cell-free filtrates inoculated into the genital tracts of 23 pigs of either sex. Inoculation of the infective material into human, pig, calf, rabbit, guinea-pig or mouse skin cultures or into embryonated hen's eggs failed to produce any specific lesion. The infectivity of the virus-like agent was destroyed by agents that denature proteins and by exposure for varying periods to temperatures from -20° to +50°C.

Growth of the lesions was followed by spontaneous regression and solid immunity to re-infection. Challenge of the immune animal resulted in delayed swelling of the inoculation site with degranulation of the mast cells.

Dmochowski, L. (1961). **Viruses and tumors.**
The electron microscope is proving to be a

powerful tool for study of viruses and virus-induced tumors.—Science 133, 551-561. 2654

This is a review of the applications of electron microscopy to the study of viruses and neoplasms, and of advances made in these fields. Aspects discussed are: present day definition of and relationship between viruses and cells; viruses and cancer in animals and man; ultrastructure of normal, of virus-infected and of cancer cells; detection of virus particles, morphology of nucleolus, nucleus and cytoplasm in cancer cells; identification and ultrastructure of tumour virus particles; viral nucleic acid and cancer. There are 88 references and notes.—T.E.G.R.

Brás, M. B., Tavares Montano, L. A. & Madogy Acabado, P. (1959). A participação diencefalo-hipofisária nas leucoses. Considerações patogénicas a propósito de um linfoma maligno. [Discussion of the role of the diencephalon and pituitary gland in leucosis and an account of malignant lymphoma in a dog.]—An. Escola Med. vet., Lisboa 2, 35-48. [Summaries in English and French.] 2655

An account is given of malignant lymphoma associated with exophthalmia in a dog aged 9 years. The pathogenesis of exophthalmia is described; it is considered that the lesion is not due to local infiltration but to a leucotic lesion of the pituitary gland or its capsule causing secretion of a hormone which produces the condition. The role of the endocrine system, diencephalon and mesenchyma in neoplasia is discussed.

—T.E.G.R.

da Graña, A. & Trefogli, C. (1958). Tratamiento de tumores perianales del perro por estilbestrol a dosis bajas, en implantación subcutánea. [Treatment of perianal tumours

in dogs by subcutaneous implantation of small doses of stilboestrol.] — Rev. Fac. Agron. B. Aires 14, 207-236. [Summary in English.] 2656

A stilboestrol pellet of 15-20 mg. was implanted s/c monthly in 67 dogs with perianal tumours. Of 44 with benign tumours, 42 were completely cured in 1-3 months, and 2 in 3-4 months. Regression was observed in 17 dogs with benign tumours that were not followed up. Of three dogs with malignant tumours, one had a rapid lysis of the tumour and died after 4 days, and reduction to one-third or one-twentieth of the original size was observed after 2 months in the other two.—M.G.G.

Montemagno, F., Agresti, A. & Montemurro, N. (1960). Il potere leucocitogeno del plasma leucosico quale test diagnostico della leucemia linfatica dei bovini. [Leucocytogenic activity of the plasma of cattle with lymphatic leucosis.] — Acta med. vet., Napoli 6, 409-425. [Summaries in English, French and Spanish.] 2657

The plasma of cattle with natural or experimental leucosis when injected i/v into healthy calves caused a progressive increase in w.b.c.; values reached highest levels (3 times normal) after 8 hours and gradually returned to normal after 24 hours. The increase was mainly in lymphocytes and circulating pro-lymphocytes. Similar results were obtained with the plasma of a calf with spontaneous leucosis in the aleucaemic phase. This did not occur with plasma heated at 60°C. for 30 min. nor with normal plasma. Of lab. animals the rabbit is considered suitable for diagnostic purposes even if the w.b.c. count could show an increase in neutrophilic granulocytes and not in lymphocytes.—T.E.G.R.

See also absts. 2443 (outbreak of combined *S. gallinarum* infection and fowl leucosis); 2787 (book, pathology of tumours).

NUTRITIONAL AND METABOLIC DISORDERS

Pounden, W. D., Frank, N. A., Sanger, V. L. & King, N. B. (1960). Feedlot bloat associated with rumenitis and esophagitis. — J. Amer. vet. med. Ass. 137, 503-506. 2658

Eleven calves had recurring acute bloat believed to be associated with inflammation of the oesophagus or rumen. The oesophagitis was attributed to "shipping fever" and the rumenitis to a ration of grain. No stable foam was formed. The bloat was relieved by stomach tube and rumen fistula. Experimental

inflation of the rumen in 2 calves revealed inability to eructate. Three other calves had bloat caused by a light fluffy foam free from ingesta. The ingesta yielded yeasts and streptococci.—M.G.G.

Coulson, C. B. & Davies, T. (1960). Lucerne saponin fractionation and bloat. — Nature, Lond. 188, 947-948. 2659

The response of rat diaphragm respiration to the isolated saponins of lucerne, from

bloat and non-bloat-producing pastures, was examined. No qualitative differences were found between samples, but inhibition increased with the amount of saponin used, indicating that quantitative levels may be a factor.

Ten different saponins were isolated, using paper chromatography, from dried samples of lucerne from bloat and non-bloat-producing pastures. There was evidence that there were higher levels of saponin constituents with high R_F values in the bloat-producing pastures.—E. J. CASTLE.

Hulse, E. V. (1961). **Gastric erosions: a terminal phenomenon in starved and in aged mice.**—J. Path. Bact. **81**, 526-528. [Author's summary modified.] 2660

Necrosis of stomach mucosa and bleeding from eroded submucosal vessels were produced in young mature mice by simple starvation. The same appearances are often seen in mice dying of old age or from a variety of chronic diseases, and it is concluded that the lesions develop when aged or chronically ill mice become too weak to seek out and eat the food provided. Causation is discussed and it seems likely that gastric movements and acidity, in the absence of food, are probably of prime importance in the genesis of the condition.

Bouckaert, J. H., Oyaert, W. & Vermaut, G. (1961). **Ataxie bij runders in de polderstreek. [Ataxia of young cattle in polder lands.]**—Vlaams diegeneesk. Tijdschr. **30**, 49-52. [In Flemish. Summaries in English, French, German and Dutch.] 2661

A form of ataxia believed to be associated with vitamin A deficiency and ergot poisoning, and closely resembling Australian ryegrass staggers, was observed in the late summer of 1959 in young cattle grazing polder lands in Belgium. Similar conditions have been reported in sheep from the Netherlands [*V.B.* **30**, 2316] and the U.K. [*V.B.* **24**, 209; **30**, 824 & 3996].—E.G.

Martin, R. S., Chubb, L. G., Fox, S., Jennings, R. C. & Morris, T. R. (1960). **The effect of white fish meal on the hatchability of hens' eggs.**—Brit. poul. Sci. **1**, 135-143. [Summaries in French and German.] 2662

In 4 experiments involving the incubation of 50,000 eggs the effect on hatchability was compared, of 4 maternal diets: the Reading all cereal basal diet alone or with 11% white fish meal, and the Houghton

breeder's diet alone or with the usual 10% fish meal. The addition of the white fish meal resulted in a significant depression in hatchability of fertile eggs even when the diet was supplemented with dried grass, dried yeast, groundnut meal, minerals and vitamins. Different stock and different conditions of housing and management were used in each experiment. The reason for this depression is not known.—A. ACKROYD.

Ault, W. C., Riemenschneider, R. W. & Saunders, D. H. (1960). **Utilization of fats in poultry and other livestock feeds. Technology and feeding practices.** pp. 41. Washington, D.C.: United States Department of Agriculture. Utilization Research Report No. 2. 2663

This review describes the fats used in animal foodstuffs, and gives various definitions and analytical characteristics. The use of antioxidants to prevent rancidity, and the storage, handling and mixing of the fat into the food are discussed. An account is given of work on feeding of fat to poultry, cattle, pigs, sheep and dogs. In general, fat can be added to the diet of all these with advantage, although certain fats have to be avoided and the rest of the ration has to be suitably adjusted. Fats may reduce the palatability of food for cattle, and have little or no effect on the butter-fat content. Their main use in this species appears to be as an additive to skim milk for calves. It is suggested that more fat could be incorporated into the dry foods for mink and for dogs. About 175 references are given.—E. J. CASTLE.

Smith, R. E. (1960). **The influence of size and surface condition of grit upon the digestibility of feed by the domestic fowl.**—Canad. J. anim. Sci. **40**, 51-56. [Author's abst. modified.] 2664

Comparisons were made between six sizes of grit ranging in diameter from 0.6 mm., and between four grits of different surface conditions. All grits improved digestion but neither size nor surface condition of the grit influenced this response. Smaller grits, and grits having smoother surfaces were not retained within the gizzard to the extent of the rougher, larger grits; consequently a greater consumption of the former grits was experienced.

Bezeau, L. M., Slen, S. B. & Whiting, F. (1960). **The nutritional value of rapeseed oil meal for lamb and wool production in**

mature range ewes.—*Canad. J. anim. Sci.* 40, 37-43. [Authors' abstr. modified.] 2665

Mature range ewes were fed for two years on rations containing 10, 20, and 30% rape-seed oil meal. No enlarged thyroids were observed in the ewes.

Rys, R., Groblewska, S. & Styczyński, H. (1960). Badania nad niedoborem miedzi u bydła. Cz. III. Kilka dalszych obserwacji w badaniach nad hipokupremią u bydła w Polsce. [**Copper deficiency in cattle in Poland. III.**]—*Roczn. Nauk rol. Ser. B* 75, 301-314. [In Polish. Summaries in English and Russian.] 2666

Sixty-seven out of 120 cattle from two different districts showed evidence of hypocupraemia. When 4 groups of these cows were receiving, daily, a mineral supplement in the form of: (1) 0.5 g. of copper sulphate; (2) 0.5 g. of ferro-ammonium sulphate; (3) 1 g. of a mixture of 50% copper sulphate and 50% ferro-ammonium sulphate; or (4) 1 g. of a mixture of 50% copper sulphate, 45% ferro-ammonium sulphate and 5% cobalt chloride—the best response was noted in group "4" in which the blood copper, haemoglobin and the number of r.b.c. rose significantly, and general improvement in the cows' condition and their milk yield was also noted. The levels of copper, sulphates and molybdenum in the animal feeding stuffs from these two districts did not differ from districts where hypocuprosis does not occur. Preliminary results obtained by electrophoresis of serum from cows with hypocupraemia did not reveal any lowering of the alpha globulin fraction.

—M. GITTER.

Simek, L., Trávníček, J. & Mandel, L. (1961). Změny obsahu železa a mědi v kolostru a mléce prasnice v průběhu laktace. [**Changes in iron and copper content of colostrum and milk in sows.**]—*Vet. Čas.* 10, 160-162. [In Czech. Summary in Russian.] 2667

In four sows the Fe and Cu content of colostrum declined abruptly during the first 24 hours after parturition, and gradually over the next two weeks when the Fe content of milk reached its lowest level. The Cu content of milk remained practically unchanged from the 14th to the 56th day of lactation, whereas during this period the Fe content began to increase slightly.—E.G.

I. Allcroft, R. (1960). **Discussion on magnesium metabolism in man and animals.**

Hypomagnesaemia in cattle and sheep.—*Proc. R. Soc. Med.* 53, 1035-1037. 2668

II. MacIntyre, I. (1960). **Discussion on magnesium metabolism in man and animals. The interrelation of calcium and magnesium absorption.**—*Ibid.* 1037-1039. 2669

I. An account of the history and incidence of hypomagnesaemia in cattle, sheep and horses is given. The acute and the slowly developing forms are described. The primary cause is not certain, and various theories are mentioned. A method of prevention is outlined.

II. Work on the interrelation of Ca and Mg in rats gives evidence of a common transport system for the absorption of these minerals, both in the gut and in the renal tubule. There are indications that this may also be true in man and other animals. Mg deficiency in man is described. M. considers that the skeleton is not a reservoir of Mg and that Mg deficiency involves the cells. Renal damage occurs rapidly in experimental Mg deficiency in animals and could occur in man, so in clinical conditions where hypomagnesaemia may be present it should not be overlooked. There are many similarities in man and animals in Mg metabolism and deficiency.—E. J. CASTLE.

De, S. K. & Goswami, S. K. (1960). **Observations on some clinical cases of hypomagnesaemia in Indian buffaloes.**—*Indian vet. J.* 37, 471-480. 2670

Characteristic clinical signs associated with lowered blood Mg content were observed in 15 dairy buffaloes; 13 treated within 2 hours of the sudden attack recovered, but 2 treated after 3½ to 4 hours died.

—R. N. MOHAN.

Evered, D. F. (1961). **Magnesium absorption in sheep.**—*Nature, Lond.* 189, 228-229. 2671

Two yearling lambs, one of which had grazed on good pasture and the other on stubble, were fed a diet low in magnesium (0.18% Mg dry weight basis) for 36 days and then a diet low in starch and magnesium, but with added urea, for a further 29 days. Serum magnesium, calcium and inorganic phosphorus contents were studied throughout. At no time was hypomagnesaemia produced.

—E. J. CASTLE.

Bromfield, S. M. (1961). **Sheep faeces in relation to the phosphorus cycle under pastures.**

—Aust. J. agric. Res. 12, 111-123. [Author's summary modified.] 2672

Faeces from sheep grazing natural *Danthonia* and improved subterranean clover pastures have been analysed for total phosphorus (TP) and inorganic phosphate (IP). Both TP and IP contents varied widely with type of pasture and with season. The variation in organic phosphorus content (by difference) remained, relative to TP, fairly constant throughout.

TP content varied from 1.8 to 17 mg. P/g. whilst organic P varied from 1.5 to 4 mg. P/g. Sheep grazing the improved pastures voided approx. 2.5-3 lb. P in inorganic form and 0.5-0.75 lb. P in organic form per sheep per year.

IP was readily soluble in acid but not in water and was readily available to wheat grown in pot culture. Organic P was not readily available to plants and was not rapidly mineralized to IP.

The contribution faecal phosphorus makes to the nutrition of pastures and to the reserve of soil organic phosphorus is briefly discussed.

Beilharz, S. & Kay, R. N. B. (1961). **Factors affecting the sodium appetite of sheep.** — J. Physiol. 155, No. 2. pp. 60P-61P of Proceedings. 2673

A previous communication (Denton & Sabine, 1960) [*V.B.* 31, 1210] describes the selective appetite for sodium solutions shown by normal sheep and by sheep depleted of sodium by loss of saliva from a fistulated parotid gland. The mechanisms underlying this appetite have been studied in further experiments.—R.M.

Miller, J. K. & Miller, W. J. (1960). **Development of zinc deficiency in Holstein calves fed a purified diet.** — J. Dairy Sci. 43, 1854-1856. 2674

Although zinc deficiency has not been reported in cattle, when 2 Holstein calves were fed milk for 8 weeks and then a low-zinc purified diet for 9 weeks, many of the signs and symptoms of hyperkeratosis developed. There was impairment of vision, thickening and roughening of the skin, dry lifeless hair, alopecia, stiff gait, and swelling and reddening around the mouth, nostrils, hocks and knees. Histopathologically parakeratosis, acanthosis and elongation of the rete net with excessive keratin formation were evident. Compared with 2 normal control calves fed the same diet but supplemented with 2.3 g. ZnO per

100 lb. feed, the zinc-deficient calves gained less weight and their blood Zn content and carbonic anhydrase activity were significantly lower.—A. ACKROYD.

Bardwell, R. E. (1961). **Osteomalacia in horses. II. Nutrition as an etiologic factor.** — J. Amer. vet. med. Ass. 138, 158-162. 2675

A condition in horses known as "wobbles" was studied in the U.S.A. and Brazil. The P.M. findings are discussed. The most frequent lesions were in the joints but similar ones occurred in animals showing no symptoms and are considered to be due to malnutrition and wear. Constrictions of the spinal canal and degeneration of the cord were generally only found in long standing cases. In Brazil spontaneous recovery often occurred in affected yearlings and sometimes in horses turned out to grass for several months. The condition may be associated with a vitamin A deficiency. [Ca/P balance should be studied—Ed.]—E. J. CASTLE.

Green, J., Diplock, A. T., Bunyan, J. & Edwin, E. E. (1961). **Studies on vitamin E. 8. Vitamin E, ubiquinone and ubiquinone in the rabbit.** — Biochem. J. 79, 108-111. [Authors' summary modified.] 2676

Female rabbits were fed various diets to study the distribution of vitamin E in their tissues. After a test period of 15 weeks, seven tissues were analysed for tocopherol, vitamin A, ubiquinone and ubiquinone.

Skeletal muscle contained little tocopherol and became depleted to exceptionally low levels. The connexion between this and muscular dystrophy was discussed. In contrast with the rat uterus, the rabbit uterus is little affected by tocopherol.

Vitamin E-deficient rabbits have lower concentrations of ubiquinone in heart, liver and skeletal muscle than animals on the same diet supplemented with alpha-tocopherol acetate. In most tissues except nerve and brain, ubiquinone was also lower. Administration of single doses of vitamin E to deficient animals increased ubiquinone in all tissues examined except fat and also decreased ubiquinone.

Rabbits kept on a vitamin E-deficient diet for 15 weeks still retain large reserves of vitamin E in their adipose tissue. Deficiency states can apparently be produced by local deprivation of tocopherol from a specific tissue.

Annison, E. F. & Lindsay, D. B. (1961). **Acetate utilization in sheep.**—*Biochem. J.* **78**, 777-785. 2677

This paper gives details of work already published in brief [*V.B.* **28**, 3694].—R.M.

Sauer, F. (1961). **Acetate metabolism in experimental ketosis of guinea pigs.**—*Canad. J. Biochem. Physiol.* **39**, 739-746. [Author's summary modified.] 2678

Non-diabetic ketosis was produced experimentally in fasted pregnant g.pigs. Total CO₂ output was less than that of normal animals but there was no impairment in the conversion of labelled acetate to CO₂. Sterol synthesis increased in ketosis while fatty acid synthesis showed the expected decrease. Ketosis was accompanied by an increase in plasma total fatty acids and in the fatty acid concentration of liver. The findings support the hypothesis that ketosis is a manifestation of increased production rather than of impaired utilization of ketone bodies.

Ferrando, R., Charton, A. & Cornette, M. (1960). **Désordres métaboliques chez la vache laitière en élevage intensif.** (Colloque du 15 novembre 1959 à l'École Nationale Vétérinaire d'Alfort). [**Metabolic disorders of dairy cows.**]—*Rec. Méd. vét.* **136**, 429-465. [Summaries in English and Spanish.] 2679

A colloquium on metabolic disorders in dairy cows—milk fever, "puerperal hepatitis", ketosis, "grass tetany" and "lactation tetany"—grouped under the term "nutritional neuroses". The point was made that cases with symptoms of milk fever but which do not respond to the classical treatment have a characteristic liver lesion, *i.e.*, enlargement, softening and discoloration. These are described as "puerperal hepatitis" (l'hépatite puerpérale) or as "modern milk fever" (fièvre vitulaire moderne). The liver disorder is considered to precede this and other manifestations of the metabolic disorders of high-yielding dairy cows.—T.E.G.R.

Larvor, P., Brochart, M. & Théret, M. (1961). **Enquête sur la fièvre vitulaire et la tétanie d'hérbage des bovins en France.** [**Inquiry into milk fever and grass tetany in cattle in France.**]—*Econ. et Méd. anim.* **2**, 5-38. 2680

Questionnaires were sent to all 3,114 veterinary surgeons in country practices in France, and the following conclusions were drawn from 1,120 replies. MILK FEVER. There are about 150,000 cases a year, or 16 per 1,000 dairy cows. The mortality rate is

1.6%, and the disease costs 8½ million N.F. a year. It is associated with high milk production, wet summers, introductions to spring pasture, increasing age, sharp falls in barometric pressure, highly calcareous soils and also soils deficient in calcium. GRASS TETANY. About 11,000-12,000 cases occur annually. The mortality rate is 19%, and the disease costs 4 million N.F. a year. It occurs in most districts where the average temp. during April is below 11°C. and in some mountainous areas. It seems to be associated with heavy application of fertilizer to pasture, rapid pasture rotation, increasing age, oestrus, and the beginning of lactation, but not with soil type. Maps and tables show the geographical incidence of the diseases.

—M.G.G.

Westermarck, H. (1959). **Effect of ACTH treatment at partus upon paresis puerperalis frequency and on the mineral content in the blood of cows.**—*Suom. Maataloust. Seur. Julk.* **94**, 101-108. [In English.] 2681

Of 16 cows with a history of milk fever, 8 injected s/c with 1,000 U.S.P. units of corticotrophin immediately after calving remained normal, while 3 of 8 untreated cows developed milk fever. In the following year the previously treated cows served as controls and 3 of these developed milk fever, while the previous controls were treated and remained normal. The K content of the blood increased in treated cows and decreased in untreated cows, and the Ca content appeared to be more stable in treated cows. There was no difference in the content of inorganic P, Mg, Na and Cu. Three cows treated 3 days before calving all developed milk fever.—M.G.G.

Jönsson, G. (1960). **On the etiology and pathogenesis of parturient paresis in dairy cows. Statistical and morphological investigations and a review of the literature.**—*Acta agric. scand. Suppl. No. 8* pp. 78. [Thesis, Stockholm. In English.] 2682

Parturient paresis (milk fever) was studied in 196 herds of Swedish Red and White cattle during 1950-55 and the following observations were made:—No first calvers were affected, but the incidence increased from the second to the ninth parturition. Total incidence was greater during the period 1953-55 than during 1950-52 and records showed that it had been increasing since 1907. Frequency during the grazing period (May-September) was significantly greater than

during the housed period (October–April). Milk production was significantly higher in milk fever prone cows than in normal cows. In milk fever cows the lactation curve was flatter, showing greater persistency of yield than in normal cows. There was no significant difference in the content of inorganic P, Mg, parturition interval between milk fever and normal cows.

Parathyroids from 52 cows were examined histologically and no differences were found between normal cows and those with milk fever. Methods for determining parathyroid function are discussed. From determinations made on the 52 parathyroids the following conclusions are drawn:—Milk fever is not caused by parathyroid insufficiency. Differences in the parathyroid function of cows of different ages cannot with certainty be considered to be a contributing factor in the age predisposition. Parathyroid activity during the non-parturient period is the same in predisposed cows and in those not predisposed.—E. J. CASTLE.

Jørgensen, S. K. (1961). **Studies on congenital porphyria in cattle in Denmark. I. Distribution of the condition and its mode of inheritance. II. Clinical features, morbid anatomy and chemical pathology.**—Brit. vet. J. 117, 1-10 & 61-73. 2683

J. discussed the definition of porphyria, reviewed the literature and presented 52 cases. Of these 11 were born during a controlled breeding experiment, and seven were studied

in the foetal state. Sixteen were P.M. observations from abattoirs and 18 were diagnosed during herd examinations.

The occurrence of the condition in Danish cattle is discussed. It had its origin in the Shorthorn animals of Jutland in which it can be traced back at least 20 years. A breeding experiment confirmed Fourie's view that congenital porphyria in cattle depends on a single recessive Mendelian factor. Animals affected with porphyria can be distinguished by colour of teeth, photosensitivity of the skin and periodic reddish discoloration of urine; confirmation of the diagnosis depends on chemical analysis of urine, faeces, teeth and bones. The teeth of the living animal may be examined in Wood's light, a red fluorescence indicating porphyria.

Porphyrin deposition in the skeleton varies during foetal life, is high at birth, declines during the first 6 months after calving and is very variable thereafter.

The main porphyrin excreted in faeces and urine was coproporphyrin I, though in some cases large amounts of uroporphyrin I also occurred in the urine. In adult animals, the porphyrin of the bones was mainly uroporphyrin, but significant amounts of coproporphyrin were always found; in foetal bones coproporphyrin was often the only demonstrable porphyrin.

It is now the practice in Denmark to carry out systematic chemical examinations on all bulls used for A.I., and sometimes on their offspring.—E.V.L.

See also abst. 2783 (report, Agricultural Research Council, Great Britain).

DISEASES, GENERAL

Mascaro, L. A. (1960). El "Mal seco" de los equidos de la montaña. [**"Mal seco" of horses, donkeys and mules in the mountains of Argentina.**]—Rev. Vet. Milit., B. Aires 8, 339-347. 2684

The disease, also known in Spanish as "dry enteritis", "constipation", "gripes" and "mycotic gastro-enteritis", occurs in late spring and summer, after rain or heavy snow, in mountainous districts at 1,200 to 4,000 m. altitude and affects horses, donkeys and mules of either sex, of any age, stabled or at pasture. The aetiology is obscure and poisonous plants, *Puccinia* fungi (parasitizing pastures), atmospheric conditions and mineral deficiency in soil or water have been suspected. Symptomatology is extensive and includes inappetence, constipation (sometimes alter-

nating with foetid diarrhoea), meteorism, salivation, intense thirst, geophagia, dilated pupils, pale mucous membranes, glossopharyngeal and labial paralysis, asthenia and locomotor ataxia. P.M. findings include congestion of various parts of the digestive tract, with necrotic foci, distension of the stomach with liquid or gas, lesions in the heart, lungs and brain. Histological changes are described. Experimental transmission in lab. animals was not achieved.—T.E.G.R.

Piusiński, W. (1961). Z badań nad patomorfologią koni produkujących surowice odpornościowe. [**Causes of death and post-mortem lesions in serum horses.**]—Med. Wet., Warszawa 17, 151-159. [In Polish.

Summaries in English, French, German and Russian.] 2685

Rupture of the liver was the most common cause of death (128 of 383 necropsies, i.e., 33.5%) and often followed severe amyloid degeneration. 107 cases (28.1%) were ascribed to general intoxication; 71 to the failure of the cardiovascular system and 31 to pneumonitis. Horses dying of ruptured liver had generally been in use longer for serum production than those dying from other causes. Histology of the lesions was discussed.—M. GITTER.

Holmes, J. R. (1961). **A case of hypertrophic pulmonary osteoarthropathy in a mare.**—*Vet. Rec.* 73, 333-334 & 335. 2686

Hypertrophic pulmonary osteoarthropathy in a mare 11 years old was characterized by swelling of limbs and forehead, and rapid loss of condition, despite good appetite. The mare was slaughtered 3 months after onset of symptoms. Formation of new bone was observed in radius, tibia, metacarpal and metatarsal bones. There was a fractured rib with localized pleural adhesion and minimal lesions in the lung. In horses the condition appears to be rare; in dogs it is more common. In the past bone lesions appeared in association with TB., but most cases nowadays are precipitated by pulmonary neoplasia.—E.G.

I. Espersen, G. (1961). *Dilatatio et dislocatio ad dextram abomasi bovis. 80 tilfaelde af højresidig løbedilatation hos kvaeg.* [**Abomasal dilatation with right displacement in cattle.**]—*Nord. VetMed.* 13, Suppl. No. 1 pp. 168. 2687

II. Espersen, G. & Simesen, M. G. (1961). *Alkalose ved højresidig løbedilatation. Det klinisk-kemiske billede før og efter operativ behandling (14 dyr).* [**Alkalosis in abomasal dilatation with displacement to the right. The clinical chemistry before and after surgery.**]—*Ibid.* 13, 147-159. [In Danish. Summaries in English and German.] 2688

I. Espersen's monograph summarizes the incidence, pathogenesis, pathology, symptoms, diagnosis and treatment of dilatation of the abomasum with displacement to the right in 80 cattle. The cause of the condition appeared to be mechanical or paralytic ileus. It was not always accompanied by torsion of the abomasum; torsion was present in 14 of 36 cases that died. Exact diagnosis during life was possible only by laparotomy, because dilatation with displacement to the left also occurred, but tentative diagnosis was possible

by rectal palpation. Ulcers and deposits of sand in the abomasum did not appear to be a primary cause of the condition, neither was pregnancy a cause. There was usually some degree of inflammation of the abomasum. It was commonest in adult cows.

Thirty-three of the 80 cases recovered after surgical treatment which consisted of emptying the abomasum by means of laparotomy. There are 46 illustrations and 11 tables (all with captions in English). The illustrations depict the topographical anatomy and the surgical correction of the condition.

II. The alkalosis that followed abomasal dilatation was similar to that occurring after pyloric obstruction in mammals with a simple stomach.—R.M.

Marcato, P. S. (1960). *Mastopatia fibrocistica nella vacca.* [**Cystic fibrosis of the udder in cows.**]—*Acta med. vet., Napoli* 6, 517-528. [Summaries in English and French.] 2689

The gross and microscopic appearances of cystic fibrosis of the udder in 2 cows are described. There was no evidence of a chronic inflammatory or neoplastic process and it is considered the disease is similar to fibrocystic mastopathy in human pathology.

—T.E.G.R.

Leuthold, A. (1961). *Über Entropion beim Rind.* [**Entropion in cattle.**]—*Berl. Münch. tierärztl. Wschr.* 74, 93-94. [Summary in English.] 2690

Three bulls washed with soft soap before being sent to market developed unilateral or bilateral entropion a few weeks later, probably through conjunctival irritation. Corneal ulcer soon appeared, but recovery was rapid after surgical correction.—M.G.G.

Morcos, M. B. (1960). *Nature and etiology of ulceration of the sole of the claw in the bovine.*—*Med. Veeartsenijschool Ghent* 4, No. 3 pp. 30. [In English. Summaries in French and Flemish.] 2691

Ulcerative lesions of the sole in cattle were associated with failure of the local blood supply at the site where these lesions commonly occur, involving also the podotrochlear bursa and the navicular bone. Hepato-renal symptoms seen in affected cattle were believed to be due to circulating toxins of secondary bacterial contaminants. Details were given of surgical treatment by amputation of the claw and of electrophoretic studies of serum protein patterns.—E.G.

Prat, J. (1961). Note complémentaire sur le syndrome "myopathie-dyspnée" des veaux de lait (Essai thérapeutique). [**Further observations on the myopathy-dyspnoea syndrome in calves.**—Rev. Méd. vét. 112, 100-108. [Summaries in English and Spanish.] 2692

P. suggested that the cause of this syndrome [see *V.B.* 31, 1227] might be irritation of the autonomic nervous system by the toxins of intestinal bacteria. Three calves with stiff gait, rapid breathing and tachycardia recovered after parenteral treatment for 4 days with oxytetracycline, cortisone, vitamins B and C, heart stimulants, Cu and Co. A fourth calf with stiff gait, left untreated, also recovered.—M.G.G.

Wurzinger, H. (1961). O současné situaci v šípavce prasat v ČSSR. [**Atrophic rhinitis in pigs in Czechoslovakia.**—Sborn. čes. Akad. zemědělsk. Věd, vet. Med. 6, 173-182. [In Czech. Summaries in German and Russian.] 2693

In Czechoslovakia porcine atrophic rhinitis was first recorded in 1952. The disease is notifiable. Examination for atrophic rhinitis of pigs, slaughtered or dead from various causes is compulsory, in order to locate infected foci. Apparently healthy pigs from infected herds are ear-marked. Diseased or suspected brood sows and boars are culled.—E.G.

Kékesi, B. (1961). Klinikai és pathológiai megfigyelések ún. tüdővizényös sertéseken. [**Pulmonary oedema in pigs possibly of nutritional origin.**—Mag. állator. Lapja 16, 47-52. [In Hungarian. Summaries in English and Russian.] 2694

The aetiology of lung oedema of pigs, occurring quite independently from circulatory disturbances and infectious disease, was studied, and the treatment was attempted on 500 affected pigs. The condition occurred in pigs reared on a high carbohydrate low-protein diet lacking several essential amino-acids, especially when this type of diet was introduced suddenly. On the basis of biochemical analyses, clinical and postmortem findings a theory as to the aetiology is put forward. It is assumed that pulmonary oedema is the result of interplay between the following factors: (a) decreased osmotic plasma pressure resulting from decreased albumin/globulin ratio caused by amino-acid deficiency; (b) insufficiency of the left

ventricle resulting from potassium deficiency; (c) increased permeability of the pulmonary vessels; (d) impaired decomposition and neutralization of histamine in the lungs through cyanosis and lack of arginine and lysine. Five case histories with P.M. findings are described in detail. A treatment schedule including analeptics, barbiturates, anti-histamines, diuretics, purgatives, and diet is described, with which 182 out of 185 affected animals recovered. For the prevention of the condition gradual introduction of the fattening ration is suggested.—A. SEBESTENY.

Kozumplik, J. (1961). Použití procainu při léčbě průjmů u selat a telat. [**Diarrhoea in piglets and calves treated with procaine.**—Veterinářství 11, 143-145. [In Czech.] 2695

One teaspoonful twice a day of an aqueous solution of 1-1.5% of procaine hydrochloride cured acute diarrhoea in 398 of 403 piglets (aged between 2 and 5 days) and 14 of 17 calves, and chronic diarrhoea in 25 of 54 piglets and 6 of 14 calves. Improvement was seen 10-12 hours after the first dose.

—E.G.

Di Martino, M. (1960). Sulla spondylartrosi cronica del segmento lombare nel cane. (Nota clinica). [**Chronic spondylarthrosis of the lumbar segment in dogs.**—Acta med. vet., Napoli 6, 443-456. [Summaries in English and French.] 2696

An account of clinical and radiological observations on 14 dogs, one of which also exhibited nervous symptoms.—T.E.G.R.

Bardens, J. W., Bardens, G. W. & Bardens, B. (1961). Clinical observations on a Von Gierke-like syndrome in puppies. — Allied Vet. 32, 4-6 & 7. 2697

Clinical manifestations resembling Von Gierke's disease (glycogenosis) in man have been observed in toy breed puppies. The condition seems to be precipitated by stress factors such as vaccination, weaning or change of environment. Puppies develop vertigo, incoordination, sunken eye balls and muscular tremors and if treatment is not given promptly, they become comatose and may die. Blood sugar levels decrease to about 40 mg. per 100 ml. of whole blood and visceral organs are infiltrated with glycogen. Restoration of the blood sugar to normal by administration of 5-10 ml. of 50% glucose promptly restores consciousness, whilst corticosteroids (oral prednisolone 2.5 mg. twice daily for 7 days) has aided in combating the stress factor and

usually prevents recurrences. During the past 4 years, 88 cases have been seen.

—A. ACKROYD.

Anon. (1961). **Aspects of skin disease of the dog and cat.** pp. 72. London: British Veterinary Association. 2698

The purpose of this booklet is to assist the veterinary surgeon in diagnosis and treatment of skin diseases. There are sections on nutritional requirements, arthropod infestations and simple laboratory methods for their diagnosis, bacterial and fungal infections, skin tumours, diseases of the ear, mammary gland, and anal region, allergic diseases, injuries, and endocrine and systemic disorders. The descriptions of the diseases are concise and accurate, and the directions for treatment are sound and practical. There are 18 photographs, mostly of tumours. The booklet will be extremely useful to practitioners.—M.G.G.

Epstein, B. (1960). Enfermedades frecuentes en los visones de la Argentina. [**Common diseases of mink in Argentina.**]—Rev. Fac. cienc. vet. La Plata 2, No. 4 pp. 51-56. 2699

Common diseases of mink diagnosed P.M. were: acute or subacute interstitial nephritis (considered to be associated with acidosis); urinary calculi; hepatic steatosis; thiamine deficiency. Gross and microscopic lesions and symptoms are described and aetiology is discussed.—T.E.G.R.

Raynaud, J., Blanc, G. & Ascione, L. (1960). Etude des glandes salivaires du mérion (*Meriones shawi grandis*, C.) et des inclusions nucléaires présentes dans ces glandes. [**Histology of salivary glands in the gerbil and nuclear inclusions in the glands.**]—Arch. Inst. Pasteur Maroc 6, 75-84. 2700

The microscopic anatomy of the mandibular, sublingual and parotid salivary glands of the gerbil was described. Of 15 adult gerbils captured in Morocco, 14 had nuclear and cytoplasmic inclusions in the cells of the ducts. Three young gerbils were inoculated i/p with an emulsion of affected salivary glands, and pilocarpine was injected every 2 days. P.M. examination after 10 days revealed massive infection of the salivary glands.—M.G.G.

Griffiths, M. E., Calaby, J. H. & McIntosh, D. L. (1960). **The stress syndrome in the rabbit.**—C.S.I.R.O. Wildlife Res. 5, 134-148. [Authors' summary modified.] 2701

Adrenal weights and adrenal ascorbic acid

levels in wild rabbits are very variable. Lipoid droplets in the adrenal cortex of a wild rabbit kept in the laboratory were much more numerous than in an animal killed in the field. Stress such as cold ($-12^{\circ}\text{C}.$) had little effect on adrenal weight, on ascorbic acid level, or on the number of lipoid droplets in the cortex. Formalin injected s/c elicited a threefold increase in the size of the adrenal. Growth, haemoglobin levels, blood sugar levels, and blood urea levels were unchanged by a 20-day treatment with cold for 6-7 hours daily. Rabbits adapted to cold in this way can survive for 72 hours at -12° without food or water; unadapted rabbits go into hypoglycaemic shock and exhibit uraemia within 24 hours. Adaptation to noise gives crossed resistance to cold. Rabbits treated with formalin, a too severe stressor, have no resistance to cold. Rabbits from dense populations are as resistant to physical stress as rabbits from populations of moderate density, provided nutrition is adequate.

The biochemical and morphological findings are discussed in relation to theories of stress and regulation of animal numbers.

Chu, H. P. (1960). **A laboratory handbook on diagnosis of poultry diseases.** pp. 66. Rome: Food and Agriculture Organization of the United Nations. [Animal Health Branch Monograph No. 2.] 2702

Although the author states that this volume is not intended to be a complete handbook, it certainly contains a large number of useful facts and methods. It will act as a good starting point for anyone setting up a diagnostic unit specializing in poultry diseases.

The subject matter is well divided into suitable chapters. Staining methods, the preparation of media and post-mortem procedure are dealt with in detail, as are the bacteriological and virological methods in common use. Separate chapters are devoted to the diagnosis of Newcastle disease, and to the differential diagnosis of respiratory diseases, and as may be expected from this author these are the best in the book, setting out clearly conditions often described in a confusing manner. It may be that the inexperienced will form the impression that the diagnosis of respiratory diseases of poultry is straightforward and easy, since little emphasis is placed on the amount of time the various procedures take or on the many difficulties they present. Of course, any such misconceptions will soon be rectified by

experience. An example may be quoted from another group of diseases. In a busy diagnostic laboratory it will soon be found that it is more practicable to diagnose infective avian encephalomyelitis by histological methods rather than by intracerebral inoculation of day-old chicks or the intra-ocular inoculation of 11-day embryos as suggested in this handbook.

It is difficult to avoid oversimplification in any book of this type and perhaps it would have been useful to have inserted a warning that a knowledge of diagnostic methods does not make a good diagnostician any more than an intimate knowledge of the works of Mrs. Beeton can make a good cook.

This is a useful publication and will be welcomed by many. Because of its usefulness it is to be hoped that it will eventually be presented in a more durable form. The present binding will stand up to very little usage and this is surely an important requirement of any handbook.—B. S. HANSON.

Innes, J. R. M. & Stanton, M. F. (1961). *Acute disease of the submaxillary and Harderian*

glands (sialo-dacryoadenitis) of rats with cytomegaly and no inclusion bodies. With comments on normal gross and microscopic structure of the exocrine glands in the head and neck of rats.—*Amer. J. Path.* 38, 455-468. [Authors' summary modified.] 2703

Two separate outbreaks of an acute disease (sialo-dacryoadenitis) with low mortality affected the submaxillary and Harderian glands of rats. There was a marked swelling of the neck due to enlargement of the salivary glands and inflammation and oedema of adjacent areolar tissues. Characteristically, the animals developed "red porphyrin tears" from the Harderian part of the complex. Within the submaxillary glands the process was one of acute inflammation with enlargement of parenchymal cells and hyperplasia of duct epithelium but without inclusion bodies. The cause of the disease was not determined, but the inflammatory reaction and epidemic pattern suggested an infectious agent. The condition is distinct from the so-called cytomegalic or salivary gland virus diseases of rodents.

POISONS AND POISONING

Mather, G. W. & Low, D. G. (1960). *Thallium intoxication in dogs.*—*J. Amer. vet. med. Ass.* 137, 544-549. 2704

Clinical and laboratory findings in 6 dogs with accidental thallium poisoning were increased heart and breathing rates, congestion of the visible mucous membranes, necrosis of skin subjected to pressure or friction, haemoconcentration, leucocytosis, lymphopenia, proteinuria, granular casts and bilirubinuria. Five were treated with 70 mg. of diphenylthiocarbazone per kg. body wt. 3 times daily, with supportive therapy, and these recovered. The untreated dog died.—M.G.G.

In rabbits poisoned with Se, the total N content of the urine and non-protein N content of the blood serum increased, the cholesterol content of the blood decreased, and changes in the blood picture were seen. The distribution of Se in the body of poisoned animals was investigated. Tumours developed in the subcutaneous tissues of the neck in some of the mice poisoned with selenium.—M.G.G.

Campbell, E. A. (1961). *Iron poisoning in the young pig.*—*Aust. vet. J.* 37, 78-83. [Author's summary modified.] 2706

Investigations using piglets showed that the toxic dose of iron is twice the maximum therapeutic dose. Absorption was rapid and occurred from both the stomach and duodenum. With high oral doses, the regulatory apoferritin/ferritin mechanism was no longer restrictive and absorption appeared to be by diffusion. Toxic effects may be produced either by damage to the alimentary mucosa or as a result of the high plasma iron levels attained.

Bobby, F. C. & Edmondson, J. (1960). *Egg production severely affected by feeding*

Tsuzuki, H., Okawa, K. & Hosoya, T. (1960). *Experimental selenium poisoning.*—*Yokohama med. Bull.* 11, 368-396. [In English.] 2705

Body weight, length of tibia, and physical stamina of mice were affected adversely by i/p injection of 15 µg. of selenite daily for 5 weeks or oral administration of 100 µg. of selenite or metallic Se daily for 3 weeks, and many died. All died after inhalation of Se vapour for 30 min. daily. Se ointment rubbed on to the skin caused pronounced dermatitis and slow growth. The LD₅₀ of selenite given i/p was 6.66 mg./kg.

thiram-treated wheat to laying birds.—N. Z. J. Agric. 101, 447-448. 2707

When wheat treated with the seed protectant thiram [tetramethylthiuram disulphide] was fed to laying hens and chicks it had no adverse effect on health and weight gains. However, when 78% of treated wheat was included in the diet of 60 pullets in full lay, egg production dropped from 63% to 3% in three days and remained below 5% until treatment stopped after 20 days. Egg production then rose rapidly and was equal to that of the controls 10 days later.—E. J. CASTLE.

Ockner, R. K. & Schmid, R. (1961). **Acquired porphyria in man and rat due to hexachlorobenzene intoxication.** — Nature, Lond. 189, 499. 2708

An outbreak of cutaneous porphyria in man in Turkey with symptoms of photosensitivity, marked porphyrinuria and hepatomegaly was tentatively ascribed to the ingestion of wheat treated with a fungicide containing hexachlorobenzene. The authors' experiments demonstrated that in the rat chronic ingestion of hexachlorobenzene can cause a profound disturbance in porphyrin metabolism: in view of this result and this occurrence of porphyria in 3 genetically distinct populations in Turkey, it is considered unlikely that the condition depends on an inherited abnormality.—E.V.L.

Hakim, S. A. E., Mijović, V. & Walker, J. (1961). **Experimental transmission of sanguinarine in milk: detection of a metabolic product.**—Nature, Lond. 189, 201-204. 2709

Lactating rabbits were given s/c 4-8 mg. of sanguinarine chloride (obtained from roots of *Sanguinaria canadensis*) in aq. soln. In 4 out of 10 samples of their milk, sanguinarine, a green-fluorescing metabolic product and several other fluorescing substances absent from normal rabbit milk were detected. The isolated liver of a rat converted sanguinarine into this green-fluorescing metabolic product, which was identified as 3,4-benzacridine. A rise in eye tension was observed in 4 monkeys given milk from a goat fed *Argemone* leaves, which contain traces of sanguinarine together with other isoquinoline alkaloids. The possibility of the contamination of cows' milk with toxic poppy-fumaria alkaloids was discussed.

—M.G.G.

Bull, L. B., Rogers, E. S., Keast, J. C. & Dick, A. T. (1961). **Heliotropium poisoning in cattle.**—Aust. vet. J. 37, 37-40. [Authors' summary modified.] 2710

Two outbreaks in young cattle in New South Wales are described. Deaths occurred in steers introduced from Victoria. About half the steers died whereas the heifers of the same age and origin, and the resident breeding cows, were unaffected clinically.

As a result of drought the pastures were very sparse, but summer falls of rain had favoured the growth of *H. europaeum*. Deaths commenced in February and continued until the residual steers were sent to slaughter in April.

Mention is made of the disease in female cattle on other properties.

Duncan, C. S. (1961). **Oak leaf poisoning in two horses.**—Cornell Vet. 51, 159-162. 2711

A gelding had for half an hour and a mare for 2 hours access to leaves of *Quercus rubra* var. *borealis*. After 6 days both were ill, the mare severely, with depression, anorexia, abdominal pain, reduced peristalsis, constipation, slight icterus, haematuria, oedema and weakness. The gelding recovered after treatment with purgatives and aspirin; the mare was given iron, arsenic, strychnine and antihistamine by tube, glucose i/v and 2 transfusions totalling 5 quarts of blood before it recovered in 16 days.—E.V.L.

Nowacki, E. & Wężyk, S. (1960). **Wstępne badania nad toksycznością alkaloidów łubinowych dla organizmu królika (*Oryctolagus cuniculus* L.). [Toxicity for rabbits of lupin alkaloids.] — Roczn. Nauk rol. Ser. B. 75, 385-399. [In Polish. Summaries in English and Russian.] 2712**

This work was carried out with sparteine—considered by the authors to be the most toxic of all lupin alkaloids. When given by mouth the alkaloid was 20 times less toxic than when given intravenously. The m.l.d. of sparteine sulphate administered orally was 810 mg. per kg. of live body weight and 32 mg. when injected. The lupin alkaloids are little altered by the liver enzymes and most of them are excreted unaltered in urine and faeces.

—M. GITTER.

Brown, J. M. M., le Roux, J. M. W. & Tustin, R. C. (1960). **Advances in "Geeldikkop" (*Tribulosis ovis*) research. 4. The pathology of Geeldikkop—Part I.**—J. S. Afr. vet. med.

Ass. 31, 179-193. [Authors' summary modified.] 2713

The haematology, gross pathology and histopathology of sheep at various stages of the typical "Geeldikkop" syndrome are presented. Cases representing various deviations from the typical pattern are discussed and some thoughts regarding the close relationship of "Geeldikkop" and "Enzootic Icterus" advanced. Certain blood cell dyscrasias such as thrombocytopaenia, leucopaenia, lymphocytopaenia and a marked

"shift to the left" in the neutrophils are reported for the first time in this disease. Other new findings recorded are atrophy of the lymphoid tissue throughout the body, severe renal lesions, hypoplasia of the red bone marrow and severe involvement of the adrenals. The liver pathology is discussed fully and compared with that of "Alveld", facial eczema, and human chlorpromazine icterus. Some thoughts are also advanced regarding the cause of death of natural cases of the disease.

See also abst. 2793 (book, chemicals in food and in farm produce).

PHARMACOLOGY AND GENERAL THERAPEUTICS

Kirk, H. [Edited by] (1961). **Index of proprietary veterinary preparations.** pp. 36. London: Nivek Publications Ltd. 5s. 2714

This lists the preparations, together with principal indications and names of British manufacturers, under a pharmacological classification. Composition of the preparations is not given and there is no alphabetical index.—R.M.

Johannes, G. (1961). Untersuchungen über die Verträglichkeit, Wirkung, Dosierung und praktische Anwendung des Phenothiazinderivates Combelen (= Propionylpromazin)-Bayer beim Rind. [Toxicity, action, dosage and indications of Combelen (propionylpromazine) in cattle.]—Inaug. Diss., Hanover pp. 34. 2715

I/v doses of 0.12-0.30 mg./kg. body wt. and i/m doses of 0.15-0.40 mg./kg. of propionylpromazine were well tolerated in 101 cattle. S/c administration was not recommended because of possible local reactions. Full sedative effect took place 10-15 min. after i/v and 25-40 min. after i/m injection. Effect on respiration, circulation, digestion and locomotion was negligible. The drug was recommended for use as a tranquillizer in wild or vicious animals and in conjunction with local anaesthetics for minor surgical operations.—E.G.

Clark, R. (1960). **The response of Merino sheep to various diuretic drugs.**—J. S. Afr. vet. med. Ass. 31, 227-234. [Author's summary.] 2716

Acetazolamide, mercuramide, mersalyl, hydroflumethiazide, aminophylline, and glucose and urea intravenously, were tested

on sheep. None increased the average urine output by more than some 25%. No clinically satisfactory diuretic for sheep was found. Large doses of acetazolamide caused anorexia. Mercuramide caused glycosuria and urea retention.

Hofmeyr, C. F. B. (1960). **Some observations on the use of succinylcholine chloride (suxamethonium) in horses with particular reference to the effect on the heart.**—J. S. Afr. vet. med. Ass. 31, 251-259. [Author's summary modified.] 2717

The drug was used on 31 horses and two mules, at the rate of 0.17 mg./kg. intravenously. Collapse occurred in 31 cases, in a mean time of 30 sec. after injection of the drug. Apnoea occurred in 26 of these and lasted an average of 59 sec. The mean period of recumbency was 214 sec. Two horses died in cardiac arrest.

ECG studies, done on seven cases, demonstrated effects on the cardiac conduction mechanism and indicated myocardial injury. Warning is issued against indiscriminate use of the drug; apprehension is expressed with regard to possible long-term effects, particularly in racehorses.

Bloch, B. (1960). **Bonding of fractures by plastic adhesives.**—Aust. vet. J. 36, 192-197. 2718

The use of epoxy resins in human surgery, particularly for the bonding of fractures, is described. Callus formation and blood supply of bones are still being investigated, and the biochemical and biomechanical processes involved are discussed. Early experimental work was done on sheep. —P. MANUSU.

See also absts. 2442 (combined neomycin-oxytetracycline treatment of *S. pullorum* carriers); 2462 (chlorpromazine in tetanus); 2486 (effect of cortisone and x-irradiation on *T. lewisii* infection in rats); 2592-2593, 2595-2598 & 2604 (insecticides); 2607-2609, 2627, 2639, 2641-2643 & 2648 (anthelmintics); 2789 (book, new and nonofficial drugs).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Mommaev, S. (1960). [Water metabolism of sheep in relation to the amount of water supplied.] — Trudy Turkmen. Inst. Zhivotnovod. i Vet. 2, 299-317. [In Russian.] 2719

Sheep at pasture allowed to drink only once a day lost about 9% of their weight in summer. The specific gravity and protein content of the blood plasma increased. They drank 5-6½ litres of water at a time, compared with only 0.45 litres during the wet season.

—M.G.G.

I. Fisher, R. B., and II. Payne, J. M. & Sansom, B. F. (1961). Uptake of small resin particles by the alimentary canal of the calf. —Nature, Lond. 189, 494-495. 2720

I. Fisher, commenting on the demonstration by Payne *et al.* [*V.B.* 31, 1609] that small resin particles were able to penetrate the walls of the alimentary canal, doubted that a similar process could be of any nutritional value.

II. Payne & Sansom, replying, denied that any such claim was made and stated that their chief concern was with the pathogenesis of infectious diseases.—JOYCE E. HAMMANT.

Macpherson, R. K. [Compiled by.] (1960). Physiological responses to hot environments. An account of work done in Singapore, 1948-1953, at the Royal Naval Tropical Research Unit, with an appendix on preliminary work done at the National Hospital for Nervous Diseases, London. —Spec. Rep. Ser. med. Res. Coun., Lond. No. 298 pp. 323. [London: H.M. Stat. Off.] 35s. 2721

Heat regulation and adaptation to hot climates are subjects of great interest to veterinarians in tropical countries especially in those countries where attempts are being made to improve the productivity of local breeds by importation of breeding stock from more temperate climates.

This book is concerned with the response of man to hot environments and man has been the subject in the many experimental studies which it describes.

The heat regulation mechanism of man is not the same as that in cattle and horses but the basic principles are the same and there is much here which will be of interest and value to veterinary physiologists.

Wartenberg, L. (1960). Wpływ transportu oraz przedubojowego wypoczynku na poziom glikogenu i kreatyniny u trzody chlewnej. [Influence of transport and of rest before

slaughter on creatinine in urine and glycogen in muscle of pigs.]—Weterynaria, Wroclaw No. 8 pp. 123-137. [In Polish. Summaries in English and Russian.] 2722

After 50-70 hours of rail transport W. recorded a drop in muscle glycogen and rise in urine creatinine levels in pigs. When the animals were rested after transport the glycogen levels rose again, more quickly in winter than in summer. The urine creatinine level fell to normal within 24 hours, summer and winter. Road transport, though of shorter duration, appeared to have been more tiring and resulted in marked elevation of the urine creatinine level.—M. GITTER.

Molyneux, G. S. & Lyne, A. G. (1961). Studies on experimental dermal cysts in sheep. —Aust. J. biol. Sci. 14, 131-140. [Authors' summary modified.] 2723

The growth of 7 experimental dermal cysts in 4 sheep was studied for up to 83 weeks. The similar behaviour of all the cysts indicated the reliability of the technique for producing standard epithelium-lined cysts. With growth in surface area of the cysts the number of wool follicles per unit area decreased. Histological evidence and the constancy of the secondary/primary follicle ratio indicated that the decrease in density per unit area is the result of separation of follicle groups caused by the growth of interstitial connective tissue. The value of epithelium-lined cysts as a biological system which can be used to study growth and metabolism was discussed.

Lyne, A. G. (1961). The postnatal development of wool follicles, shedding, and skin thickness in inbred Merino and Southdown-Merino crossbred sheep.—Aust. J. biol. Sci. 14, 141-156. 2724

Four inbred Merinos (2 ewes and 2 wethers) and four Southdown-Merino crossbreds (3 ewes and 1 wether) were used for this quantitative study. The animals were sampled on 30 occasions from birth to approximately 2 years. Detailed counts were made of follicle types and relevant ratios were calculated.

In both the Merinos and crossbreds the incidence of shed follicles was extremely low, and there was no apparent influence of season, on the shedding of follicles.

The skin of crossbreds was thicker than that of Merinos. There were no marked

changes of skin thickness with age except during the early postnatal period. Other factors apparently influencing skin thickness were nutrition, pregnancy and shearing.

—A. G. CULEY.

Quick, A. J., Collins, R., Taketa, F. & Hussey, C. V. (1961). **Variations in the prothrombin complex of different species.** — *Amer. J. Physiol.* 200, 609-613. [Abst. from authors' summary.] 2725

The prothrombin concentration of man, dog, rabbit, cat and cow as determined by the two-stage method is about the same but in sheep is only half as great. The one-stage prothrombin time of the plasma of these species varies greatly and is dependent upon the type of thromboplastin employed, the exposure to foreign surface, various serum factors as well as the concentration of prothrombin.

Sawyer, P. N. & Valmont, I. (1961). **Evidence of active ion transport across large canine blood vessel walls.**—*Nature*, Lond. 189, 470-472. 2726

Free canine thoracic aorta and vena cava were studied in flux cells modified from Hogben's design. The membranes were bathed in Krebs' serum saline substitute; tracer amounts of radioactive isotopes Na^{22} , Na^{24} and Cl^{36} were used to measure the rates of Na and Cl flux under varying conditions. Results showed that dominant ion fluxes for Na and Cl occurred from intima to adventitia across fresh oxygenated aortic wall at a potential difference approaching zero. For the vena cava, flux levels were 5-6 times greater in the opposite direction. Anaerobic conditions produced a sodium flux in the opposite direction less than that under aerobic conditions. With increase in temp., the ion flux increased approx. 8-15% per degree C. from 8°-56°C. The greater part of the ion movement appeared to be passive; but it was not all passive, because (a) Na and Cl fluxes were not identical in each direction, and (b) the ion movement appeared to be oxygen dependent and variable with temp.—JOYCE E. HAMMANT.

Koch, J. H. & Turner, H. N. (1961). **Studies on the sodium-potassium balance in erythrocytes of Australian Merino sheep. I. Changes in concentrations in the erythrocytes of lambs from birth to 98 days.**—*Aust. J. biol. Sci.* 14, 79-86. [Authors' summary modified.] 2727

Estimates are given of the sodium-potassium balance in the erythrocytes of 16

Australian Merino and Merino cross lambs at ages ranging from 0 to 98 days. The Na values rose and the K values fell from birth till about the age of 60 days, after which each variable fluctuated about a value comparable with those obtained for the dams of the same lambs, all of which were adult Merinos.

Evans, J. V. & Blunt, M. H. (1961). **Electrolyte and haematocrit changes in the blood of sheep from foetal to postnatal life.** — *Aust. J. biol. Sci.* 14, 87-99. [Authors' summary.] 2728

Foetal and postnatal packed cell volume percentages and whole blood, plasma, and erythrocyte potassium and sodium concentrations were studied in sheep. A significant increase in packed cell volume and whole blood potassium was found between 70 and 140 days postconception. A significant decrease in erythrocyte potassium concentration occurred over the same period. The equation $Y = 64.23 + (1.017x - 0.0059x^2)$ m-equiv/l, where x = foetal age in days, best fits the data. Postnatal data fit well with prenatal data and a decrease in packed cell volume, whole blood potassium, and erythrocyte potassium associated with an increase in whole blood and erythrocyte sodium was recorded over the first 105 days of postnatal life. The red blood cell potassium concentration fell from 91.4 to 15.5 m-equiv/l over this period. The results are discussed in relation to previous work and the possibility of a change over from one type of cell to another over the period in which the blood factors were studied.

Evans, J. V. & Blunt, M. H. (1961). **Variation in the gene frequencies of potassium and haemoglobin types in Romney Marsh and Southdown sheep established away from their native environment.**—*Aust. J. biol. Sci.* 14, 100-108. [Authors' summary modified.] 2729

The high potassium gene frequency in the New South Wales flocks which were examined was significantly lower in both the Romney Marsh and Southdown breeds compared with the same breeds in Gt. Britain.

The haemoglobin A gene frequency in the Romney Marsh breed was significantly higher than that found in Gt. Britain but the Southdown flocks showed the reverse tendency. The gene frequency for the Southdown in Britain was determined from one flock only, which may not have been representative. However, when Down breed or Shortwool breed (both

of which had been established from the Southdown breed) gene frequencies from Gt. Britain were compared with the Southdown results in New South Wales a significant change similar to that seen in the Romney Marsh breed was demonstrated.

All changes were toward the normal frequencies in Merino sheep, and the possible economic significance of this is discussed.

Parcel, C. le Q., Simpson, J. K. & Avery, R. J. (1961). **Biochemical aids to the genetic typing of sheep—a further note.**—*Canad. J. comp. Med.* **25**, 13-14. 2730

The authors previously found two patterns of iron potassium and three types of haemoglobin in Cheviot and Suffolk sheep [*V.B.* **30**, 1431]. They now give the distribution of these factors within the flocks examined. In addition, two types of lactoglobulin were found by means of electrophoresis of milk. It was necessary to treat ewe's milk with lipase to remove fat before electrophoresis.—R.M.

Miyao, N. (1960). [**Strontium metabolism in domestic animals. I. The natural strontium to calcium ratio and the strontium-calcium discrimination factor.**]—*Jap. J. vet. Sci.* **22**, 273-286. [In Japanese. Summary in English.] 2731

The ratio of natural strontium to calcium in femur was 0.43 part Sr/1,000 parts Ca in horses, 0.36 in goats, 0.34 in cattle, 0.31 in pigs, 0.12 in fowls, and 0.12 in a crane. The average concentration of strontium-90 was 15.89 $\mu\text{mcg.}$ of Ca in horses, 4.81 in cows, 2.05 in goats, 1.83 in fowls, 1 in pigs, and 0.67 in the crane. It was calculated from the ratio of strontium to calcium in the food of animals that the bone retention factor of strontium is 0.308 in horses, 0.276 in cattle, 0.221 in goats, and 0.193 in fowls.—M.G.G.

Miyao, N. (1960/61). [**Studies on strontium metabolism following strontium-calcium discrimination in domestic animals. II. Retention and excretion of strontium in goat and fowl and effect of stable strontium on strontium-90 excretion. III. Strontium-calcium discrimination factors in the goat and fowl.**]—*Jap. J. vet. Sci.* **22**, 341-352 & **23**, 1-12. [In Japanese. Summaries in English.] 2732

In goats urinary excretion of Sr^{90} after i/v inj. was 63%, and after oral application 6% of the dose. Tissue concentration was higher after i/v than after oral dosage. After oral or i/v doses concentration of Sr^{90} in

bones was high in tibia and sacrum and low in scapula and ribs.

In fowls excretion of Sr^{90} and Ca^{45} was 83% and 71% respectively, following oral doses. Tissue conc. after oral Sr^{90} was generally higher than that of Ca^{45} and decrease over a period of time was slower than in goats. Concentration in bone marrow and kidneys was slightly higher than in other tissues. Retention of Ca^{45} in bone was higher than that of Sr^{90} and conc. in the femur was higher than in the ribs.

Discrimination of strontium against calcium was studied in urine, faeces, blood and bones of goats and fowls, by oral and i/v administration of Sr^{90} and Ca^{45} .—E.G.

Schmidt, P. (1960). Über den Einfluss des Thyroxins auf den Magnesium- und Calcium-Stoffwechsel beim Kalb. [**Influence of thyroxine on magnesium and calcium metabolism in calves.**]—*Inaug. Diss.*, Hanover pp. 52. 2733

S. studied Mg and Ca metabolism under normal conditions and as influenced by thyroxine, in four calves 4-10 weeks old, kept on an exclusive whole-milk diet. In two calves, P metabolism was also studied. Under the influence of thyroxine, Mg retention was markedly reduced, Ca retention less so and P retention was increased in one and reduced in the other calf. Calves given thyroxine gained less or even lost weight. Urinary excretion of Mg and Ca increased during the thyroxine period, but that of P decreased. In another group of 11 young and adult cattle, the serum Mg level fell under the influence of thyroxine.—E.G.

Schjeide, O. A. & Urist, M. R. (1960). **Proteins induced in plasma by oestrogens.**—*Nature, Lond.* **188**, 291-294. 2734

This is a critical analysis of the protein changes in hen plasma induced by oestrogen treatment. The nature and state of these plasma proteins, and the production of artefacts by the isolation procedures are discussed.—N. SABA.

Stietenroth, H. (1960). Vergleichende Blutzuckerbestimmungen des Nabelblutes normalgeborener und durch Schnittentbindung entwickelter neugeborener Ferkel. [**Comparison of sugar content of umbilical blood from piglets born normally or by Caesarian section.**]—*Inaug. Diss.*, Hanover pp. 41. 2735

Average glucose content in umbilical blood from Caesarian-delivered piglets was

81.85 mg.%, as compared with 115.23 mg.% at normal birth. Among Caesarian-delivered litters differences in blood sugar levels were substantial and were not affected by birth weight. There was a certain slight affinity between blood sugar values of dam and offspring. Differences in glucose content of heart and umbilical blood may be considerable.

—E.G.

Boda, K., Kóňa, E. & Tomáš, J. (1961). Štúdium kvantitatívneho vzťahu acetónových látok v krvi a v mlieku kráv. [**Quantitative relationship of ketones in cows' milk and blood.**] — Vet. Čas. 10, 3-10. [In Slovak. Summaries in English, German and Russian.] 2736

Results of analysis of 35 milk and blood samples from Jersey cows and 29 from dual-purpose Pinzgau cows, confirmed the importance of quantitative and qualitative determination of ketones and diacetic acid for the diagnosis of bovine ketosis. Beta hydroxybutyric acid and total ketone values were considerably higher in Jersey than in Pinzgau cows. Acetone-diacetic acid values in blood and milk were closely related. There was no apparent correlation between β -hydroxybutyric acid values in blood and milk, but β -hydroxybutyric acid levels in milk were higher than in blood.—E.G.

Smith, R. H. (1961). **The development and function of the rumen in milk-fed calves. II. Effect of wood shavings in the diet.**—J. agric. Sci. 56, 105-111. 2737

Four muzzled and four unmuzzled young calves were fed twice daily on an entirely milk diet given from an open bucket. They were bedded with wood shavings of which the unmuzzled ate an increasing quantity with increasing age. At intervals of several weeks polyethylene glycol was administered by stomach tube and rumen samples were taken by stomach tube at 1, 2, 7 and 24 hours after dosage; the fat and the polyethylene glycol contents were determined.

The unmuzzled calves, probably mainly because of increased salivary secretion, showed greater increase in volume and in rate of flow of rumen contents than did the muzzled. Some samples showed evidence of leakage of milk into the rumen from the oesophageal groove as indicated by the presence of fat and by the progressive lowering, followed by recovery of the pH during a period after feeding.

At autopsy, following slaughter at about

22 weeks of age, general absence of papillary development in the rumen of all the calves was a feature. The animal showing greatest papillary development was one in which there was evidence that leakage of milk into the rumen probably occurred the most frequently. The leakage did not appear to affect the health of the animal. The total weight of the rumen was only slightly increased in the unmuzzled compared with the muzzled calves.

—A. BROWNLEE.

Pierce, A. E. (1961). **Further studies on proteinuria in the new-born calf.**—J. Physiol. 156, 136-149. [Author's introduction modified.] 2738

P. studied permeability of the kidney of the new-born calf to proteins absorbed from the gut, with particular reference to their molecular weight. The β -lactoglobulins of colostrum, molecular weight 35,400-40,000, have been replaced with gelatin, polydisperse, but with a molecular weight of the same size, and fed to new-born calves. By the use of this simplified system the permeability of the gut to a protein other than immune lactoglobulin has been confirmed and its significance in the aetiology of proteinuria examined.

Ash, R. W. (1961). **Acid secretion by the abomasum and its relation to the flow of food material in the sheep.**—J. Physiol. 156, 93-111. [Part of author's introduction.] 2739

The aims of the author's experiments were to observe the secretory responses of innervated fundic pouches during feeding, fasting and rumination, and to relate the responses to the conditions existing in, and the flow of food material through, the abomasum. The results obtained suggested that under normal conditions the inflow of predigested food from the forestomach, the secretion of acid by, and the flow of material from the abomasum were integrated. Acidity of the abomasal contents was an important factor regulating the secretion of acid.

Tyler, C. & Geake, F. H. (1961). **Studies on egg shells. XIV. Variations in egg weight, shell thickness and membrane thickness between eggs within a clutch. XV. Critical appraisal of various methods of assessing shell thickness.**—J. Sci. Fd Agric. 12, 273-280 & 281-289. [Authors' absts. modified.] 2740

I. Clutches of up to five eggs were available from 16 birds over three laying seasons. Variations in egg weight, shell thickness and membrane thickness were studied in relation

to the position of the egg within the clutch. It was found that generally the results agreed with those of earlier workers, but the authors' main argument was that statistically significant differences are not necessarily a good basis on which to build biological hypotheses when individual clutches and individual birds show a large proportion of results which do not agree with the mean result.

II. Shell thickness may be measured directly or expressed in terms of weight per unit area of either true shell or shell plus membranes. Percentage shell, used as an indication of shell thickness, was the least reliable method but true shell weight per unit area, shell plus membrane weight per unit area (with certain provisos), and specific gravity measured accurately by Archimedes' principle, were all very satisfactory. Specific gravity by flotation is reasonably good if suitable precautions are taken, but these make it less of a quick routine method. Calculation of specific gravity from egg weight and egg volume computed from the length and breadth of the egg is inaccurate.

Scott, T. W., White, I. G. & Annison, E. F. (1961). **Fatty acids in semen.**—*Biochem. J.* 78, 740-742. [Authors' introduction modified.] 2741

The authors investigated the concentrations of volatile fatty acids and free fatty acids (long-chain) in the semen of bull, ram, rabbit, fowl, dog, stallion and man. In addition, volatile fatty acid concentrations in the semen and blood of rams were compared, and their concentration determined in epididymal fluid from rams.

Moudgal, N. R. & Choh Hao Li. (1961). **Immunochemical studies of bovine and ovine pituitary growth hormone.**—*Arch. Biochem.* 93, 122-127. [Authors' summary modified.] 2742

The immunochemical relationship between bovine and ovine growth hormone was investigated by the quantitative precipitin technique and diffusion analysis on agar. The Ouchterlony double diffusion technique showed that of the pituitary extracts from various species used as sources of growth hormone only that of the deer contains a component which cross reacts completely with bovine hormone. Bioassay by the tibia test showed extracts from various species

including anteater, camel, sea lion and g.pig, to possess growth-promoting activity. The effect of chemical treatment of bovine growth hormone on its antigenicity was also investigated.

Schmidt, G. (1960). **Epiphysen und Apophysen in der röntgenologischen Darstellung an den Vorder- und Hinterextremitäten der Fohlen.** [**Radiography of epiphyses and apophyses in fore and hind limbs of the foal.**]—Inaug. Diss., Hanover pp. 33. 2743

Position, form and size of epiphyses and apophyses were studied radiologically in 30 carpal, 16 elbow, 7 shoulder, 30 hock, 28 stifle, 10 hip and 44 fetlock joints in foals from 3 weeks to 3½ years old. A total of 164 X-ray pictures was taken and evaluated.—E.G.

Björkman, N. & Sollén, P. (1960). **Morphology of the bovine placenta at normal delivery.**—*Acta vet. scand.* 1, 347-362. [In English. Summaries in German and Swedish.] 2744

Normal placentas from 7 cows were studied histologically and by electron microscopy. Puerperal caruncles removed 1, 2, 4, and 8 hours, and 1, 2, and 8 days after parturition, and some placentomes removed before placental delivery were also studied. In these the line of junction between trophoblast and cryptal epithelium stained very distinctly with azan after fixation in Helly's fluid. As compared with the conditions before parturition the trophoblastic microvilli also were more conspicuous. In caruncles immediately following cleansing the epithelium mostly persisted, varying in height; later this layer fell off, and there was involution of the crypts and fibroblast proliferation. In the early stages remnants of degenerate chorionic villi and other foetal detritus sometimes occurred. In the expelled placenta there was little change from the structure observed in the placentome; no trace of maternal tissues was observed. The stainability of the suture suggested that separation may be due primarily to the action of enzyme.

—F. L. M. DAWSON.

Breibart, S., Lee, J. S., McCoord, A. & Forbes, G. B. (1960). **Relation of age to radio-magnesium exchange in bone.**—*Proc. Soc. exp. Biol., N.Y.* 105, 361-363. [Authors' summary modified.] 2745

Exchange of Mg^{28} in cortical bone occurs

more rapidly in young rats than in old. The stable magnesium content of bone increases with age, varies inversely with bone water

content. A method for separating Mg from Ca and P by cation exchange chromatography is described.

See also absts. 2790 (book, rudimentation); 2791 (book, mammary gland and its secretion).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

Anon. (1960). **Radioactive materials in food and agriculture. Report of an FAO Expert Committee. Rome, 30 November–11 December 1959.** pp. 123. Rome: Food and Agriculture Organization of the United Nations. Atomic Energy Series No. 2. **2746**

A report by experts on sources, levels, importance, pathways to the diet of man, and behaviour in these food chains, of various radioactive substances. Particular attention is given to strontium, caesium and iodine; and remedial measures to prevent their ingress to man are outlined. They recommended measures to further our knowledge of these matters on an international co-operative basis, embracing in particular consideration of other isotopes, fixing methods and standards, new methods, training personnel, ensuring regular surveillance of the situation by specialists in the various sciences concerned, the giving of advice and assistance, and the dissemination of information by F.A.O. member states. The report is short, easily understood, and forms a good introduction to the subject. The greater part consists of appendices containing a mass of relevant information and references to published work.—M. K. LLOYD.

Ellis, F. B., Howells, H., Russell, R. S. & Templeton, W. L. (1960). **Great Britain. A joint United Kingdom Atomic Energy Authority and Agricultural Research Council Report. The deposition of strontium 89 and strontium 90 on agricultural land and their entry into milk after the reactor accident at Windscale in October 1957.** pp. 26. Harwell: Radiological Protection Division, Authority Health and Safety Branch. London: H.M. Stat. Off. 5s. [AHSB (RP) R2.] **2747**

The principal radioactive contaminant of agricultural land around Windscale due to this accident was iodine-131. A small amount of strontium-89 and strontium-90 was deposited also. Only on farms within two miles did milk contain amounts high enough to be distinguishable from strontium-90 deposited from world-wide fall-out and this only for a short period. The highest levels in milk were small compared with the maximum permissible levels recommended by the M.R.C. for such

circumstances, and were of a similar order to those found in milk produced in those parts of Britain where world-wide fall-out is highest. It appears that the strontium-90 in world-wide fall-out reaches milk with greater facility than that emitted from Windscale. The situation was complicated by deposition from the works prior to the accident. Since the accident there has been no deposition of strontium isotopes.—M. K. LLOYD.

Anon. (1961). **Strontium 90 in milk and agricultural materials in the United Kingdom 1959–1960.** pp. 81. A.R.C. Radiobiological Laboratory Rep. No. 4. London: H.M. Stat. Off. 5s. [Abst. from summary.] **2748**

The quantity of strontium 90 in milk produced throughout the United Kingdom during the first six months of 1960 is discussed in Part 1 of this report. The results for the late spring and early summer are of particular interest because the cattle were grazing for the first time on herbage which had grown after the rate of fall-out had been relatively low for several months; on average the milk produced during the latter part of May and June contained 49% of the strontium 90 observed twelve months previously.

The results justify the expectation that the mean level in the total mixed diet of the population as well as in milk, will be appreciably lower for 1960 than for the previous year.

Measurements of strontium 90 in herbage and soil from representative pastures throughout the country during 1959 are described.

Campbell, J. E., Murthy, G. K., Straub, C. P., Lewis, K. H. & Terrill, J. G. (1961). **Radio-nuclides in milk.**—J. agric. Food Chem. **9**, 117–122. **2749**

Milk samples taken monthly from May 1958 to December 1959 from dairies supplying 10 cities in the U.S.A. were analysed for their content of Ca, K, I^{131} , Ba^{140} , Cs^{137} , Sr^{89} and Sr^{90} . The highest average concentration of Sr^{90} and Cs^{137} was in milk from St. Louis, and the lowest in milk from Sacramento; higher concentrations occurred in spring and autumn, probably because of seasonal changes in feeding. Reports of nuclear tests were

associated with rises in concentrations of I, Ba and Sr⁸⁹ but not of Sr⁹⁰ and Cs. All the concentrations were below the maximum permissible level.—M.G.G.

Van Dilla, M. A., Farmer, G. R. & Bohman, V. R. (1961). **Fallout radioactivity in cattle and its effects.**—*Science* 133, 1075-1077. [Authors' abst. modified.] 2750

The amounts of strontium-90 and caesium-137 in cattle grazed on the Nevada atomic testing site and elsewhere in Nevada were similar to those in cattle from other parts of the U.S.A. Gastro-intestinal absorption of the relatively large amounts of radioactive cerium-praseodymium, ruthenium-rhodium, and zirconium-niobium present in the rumen is very small. Zinc-65 made its first appearance in samples of muscle and liver in November 1958 and has persisted in later samplings. There has been no evidence of biological damage to date, either histologically or grossly.

Ballantyne, E. E., Whenham, G. R. & Usiskin, S. R. (1961). **Irradiation of embryonated eggs. Preliminary report.**—*Canad. vet. J.* 2, 112-114. [Summary in French. Authors' summary modified.] 2751

A small-scale experiment in irradiating embryonated eggs is outlined, using doses that could occur in a radio-active fall-out area. From 48 eggs exposed to 500 roentgens, 26 chicks hatched and all were stunted in growth. Stunting occurred in 7 chicks from 48 eggs in the 50 roentgen group.

Claborn, H. V., Bushland, R. C., Mann, H. D., Ivey, M. C. & Radeleff, R. D. (1960). **Meat and milk residues from livestock sprays.**—*J. agric. Food Chem.* 8, 439-442. 2752

A summary of experiments in which cattle, sheep, goats and pigs were treated with 14 different chlorinated hydrocarbons and phosphorus parasiticides alone or in combinations, and the period during which detectable residues persisted in the meat and milk were determined.—M.G.G.

Rowley, I. (1960). **I. The sense of smell and food-finding in the rabbit. A study of lures for rabbit-poisoning. II. The effect of concentration on the ingestion of "1080"-poisoned baits by the rabbit.**—*C.S.I.R.O. Wildlife Res.* 5, 116-125 & 126-133. 2753

I. Raspberry essence, extensively used as a rabbit lure, was tested in the field, in enclosures, and in pens; in no instance was it

found to have significant effect in attracting rabbits to bait, nor did the rabbits tested show any preference for "lured" oats when offered in free choice with "unlured" oats. It is suggested that the sense of smell plays small part in the food-finding of the rabbit, and that the addition of a lure to bait used for poisoning rabbits is unlikely to improve the success of the technique in current use.

II. Cage experiments on the feeding of wild rabbits, *Oryctolagus cuniculus*, with carrot and oats poisoned with "1080" showed no evidence of any poison-repellency, and suggest that the poison may even be attractive. Reduction of food intake as compared with previous unpoisoned feeds was due to the onset of toxic symptoms; the delay before this occurred varied with concentration, but even at high levels (0.2%) feeding continued for at least 10 min. With concentrations between 0.02% and 0.2% this latent period and consequently the intake of poisoned bait was relatively constant. It is suggested that the normal field strength of "1080" for use with carrot could be reduced to 0.02% without impairing efficiency or requiring more bait to be laid, since consump-tion would be substantially the same. This would greatly reduce the hazard to stock and fauna.

With oats, however, rabbits eat considerably less and reduction of the present field strength would result in more poisoned bait being consumed by individual rabbits. Therefore more would need to be distributed, and the safety aspect would be relatively unchanged.

Sutmöller, P. (1960). **Report to the Government of Brazil on Veterinary Services in the Amazon Valley.** pp. 58. Rome: Food and Agriculture Organization of the United Nations. FAO/ETAP Report No. 1296. 2754

From December 1956 to mid-1960, S. worked with the Technical Assistance Mission operating in the Amazon Valley. His terms of reference were to assist in the establishment of a veterinary laboratory, and to train local personnel in diagnostic methods and the production of vaccines. There is a serious shortage of veterinarians in the region, mainly because of the low salaries. There are 3 veterinary laboratories. One produces vaccine against rabies and another against both rabies and F. & M. disease. F. & M. disease and bat-transmitted rabies occur in cattle throughout the region, but the principal economic loss is due to slow growth, low fertility, and high

mortality in calves. Mineral deficiencies are important, and cobalt deficiency may be responsible for the widespread "mal de chifre". There are also heavy losses from screw-worm infestation in cattle, ascaris infestation in buffalo calves, and swine fever in pigs. Of 2,000 cattle and buffaloes in different parts of the region, 5% were positive serologically for brucellosis. Trypanosomiasis is widespread in horses, and probably also in cattle. A "circling disease" of horses that occurs almost every year after the first rains in the Bragança district was identified as equine infectious encephalomyelitis. "Falling disease" of cattle, which can cause losses of up to 20% in a herd, mostly after exercise or excitement at the end of the rainy season, is considered to arise from a metabolic disorder. The greater part of the report is taken up by the appendices, which list the different endoparasites of domestic animals in the region, the cattle, buffalo and horse populations in the different territories, the arthropod-borne viruses that have been isolated, the mineral content of blood serum, urine and liver in cattle on 13 different farms, the Cu, Co and Mn content of soil samples, and describe the

topography, pastures, and husbandry in each territory of the region. Observations were made on the clinical appearance, haemoglobin content of the blood, specific gravity and pH of the urine, and effect of cobalt supplementation on the thorax measurement of cattle in 20 farms.—M.G.G.

Farrelly, B. T. (1961). **The veterinary medical aspects of "doping" control procedures in horse racing.**—Irish vet. J. 15, 28-40. 2755

The procedure for determining whether or not a horse has been given drugs should include clinical examination before the race, demonstration of the chemical cleanliness of utensils used in sampling, recovery of adequate volumes of sample fluids, allowing the owner split samples of the fluids to be analysed or the right to have an approved analyst present at the official analysis, the use of tests which distinguish drugs from alkaloids occurring naturally in the body, specific identification and precise determination of the amount of any organic substances detected, and provision of signed and witnessed laboratory protocols by the analyst. —M.G.G.

See also absts. 2792 (chemical and natural control of pests); 2793 (chemicals in food and farm produce).

LIVESTOCK HYGIENE

Payne, C. G. (1961). **Studies on the climate of broiler houses. I. Air movement. II. Comparison of ventilation systems.**—Brit. vet. J. 117, 36-43 & 106-114. [Abst. from author's summaries.] 2756

Fully-grown broilers avoided positions where air velocity exceeded 70 feet per min. at 60°F., but at 70° they did not avoid positions where velocities of up to 150 feet per min. were recorded. Serious causes of draughts at floor level were air inlets which directed incoming air either directly towards the floor, or towards some obstruction on the under-surface of the roof. Sound construction helped to prevent draughts.

Difficulties in measuring ventilation rates in animal buildings were emphasized and an indirect method of measurement involving determination of heat balance was discussed.

P. suggested that the maximum ventilation rate in summer was 3-4 cubic feet of air per minute per bird in houses with natural ventilation. In windowless fan-ventilated houses the air inlets should provide 0.6-1 square inch per bird.

Lancaster, J. E. (1961). **Hatchery sanitation. A review.** pp. 47. Ottawa: Health of Animals Division, Canada Department of Agriculture. 2757

This review is divided into two chapters. The first discusses the contamination and penetration of the shells of incubated eggs and infection of newly hatched chicks and poults by salmonella and other bacteria and *Aspergillus*. The second reviews the literature on the fumigation of incubators with formol and potassium permanganate. There are 83 references.—M.G.G.

REPRODUCTION AND REPRODUCTIVE DISORDERS

Restall, B. J. (1961). **Artificial insemination of sheep. VI. The effect of post-inseminal coitus on percentage of ewes lambing to a**

single insemination.—Aust. vet. J. 37, 70-72. [Author's summary modified.] 2758
Immediately after insemination 145 ewes

were allowed to associate with vasectomized rams and their lambing rate was compared with that of 124 control ewes. A 10% increase in wet ewes was observed in the treated group and the difference could not be attributed to age or flock. The results are discussed in relation to the type of vaginal mucus of the ewes at insemination and the nature of the stimulus received from the vasectomized rams. It is postulated that the stimulus may cause the release of an oxytocin-like substance which facilitates the transport of spermatozoa.

de Groot, B. (1961). **The relative contributions of the sex glands to the successive ejaculates of the bull.**—*Tijdschr. Diergeneesk.* **86**, 325-334. [In English. Summaries in French, German and Dutch.] **2759**

Examination of the ejaculates of 3 bulls (triplets) whose semen contained a high percentage of immotile spermatozoa and 4 normal bulls subjected to the exhaustion test showed that the concentration of spermatozoa (contribution of the testes) and fructose (contribution of the seminal vesicles) fell off simultaneously with successive ejaculates whereas the pH (contribution of the bulbourethral glands) rose. Multiple factor analysis of the data supported the hypothesis that the epididymis and seminal vesicles are innervated independently and continue to be stimulated with successive ejaculations. In addition, a second unipolar factor indicated that, independent of the mixture ratio of the accessory glands in relation to the ejaculate rank number (first bipolar factor), the epididymal conditions are most favourable for the maintenance of motility of the spermatozoa. The positive correlation between motility and ejaculate rank number in the triplet bulls pointed to an aging effect on spermatozoa during passage through the epididymis.—A. ACKROYD.

Lensch, J. (1961). **The early diagnosis of pregnancy in mares. (18th-30th day post coitum).**—*Irish vet. J.* **15**, 57-60. **2760**

L. describes a method combining vaginal inspection and rectal palpation by means of which pregnancy may be diagnosed between the 18th and the 30th day after coitus, with an accuracy of 90 to 95%.—E.V.L.

Havassy, I. (1961). **Stanovenie diamino-oxydázy v krvnom sére kráv a ošípaných so zreteľom na možnosť laboratórneho stanovenia gravidity u kráv. [Determination of serum diamino-oxidase in cows and sows with**

a view to pregnancy diagnosis.]—Vet. Čas. **10**, 95-103. [In Slovak. Summaries in English and Russian.] **2761**

Serum diamino-oxidase activity was higher in cows than in sows. The serum diamino-oxidase test which is used for determination of human pregnancy was unsuitable for pregnancy diagnosis in cows because there was no significant difference between diamino-oxidase activity in pregnant and in non-pregnant cows.—E.G.

Bane, A. & Rajakoski, E. (1961). **The bovine estrous cycle.**—*Cornell Vet.* **51**, 77-95. **2762**

Forty-two Swedish Red and White heifers were examined daily during the oestral week and otherwise twice weekly; 36 were slaughtered at known intervals after their last heat; 9 were checked at least every second day for 21 consecutive cycles. Two types of chemical test papers used for human ovulation detection proved ineffective for heifers. Rectal and cervical body temperature changes were similar with an ovulation drop of 0.35°C. on the day following heat and a statistically significant luteal rise of 0.2°C. from 7th to 16th days. No follicles over 14 mm. diameter were detected; a dioestral follicular growth wave was usually apparent from 4th-10th day. Fern pattern development in the cervical mucus smear was also followed.

—F. L. M. DAWSON.

Short, R. V. (1961). **Steroid concentrations in the follicular fluid of mares at various stages of the reproductive cycle.**—*J. Endocrin.* **22**, 153-163. [Author's summary modified.] **2763**

Nine steroids were estimated in each of twelve samples of follicular fluid collected from oestrous, luteal-stage and pregnant mares. In ten of the samples oestradiol-17 β was the major steroid present.

The larger follicles tended to have the higher steroid concentrations. There was not much difference between oestrous and luteal-phase animals with regard to any of the steroids measured. It was concluded that the gonadotrophic hormones do not influence the conversion of progesterone to oestrogens.

Since the ratios of the various steroids seem to differ greatly between follicular fluid and luteal tissue, it was postulated that cell type may be the chief discriminant of the secretory activity of the ovary.

Ulberg, L. C. & Lindley, C. E. (1960). **Use of progesterone and estrogen in the control of**

reproductive activities in beef cattle. — J. Anim. Sci. 19, 1132-1142. 2764

The authors made 337 treatment trials in heifers or cows using s/c doses of progesterone, usually daily for 14 days, with or without adjuvant oestrogen, with the aim of synchronizing oestrus. As little as 12.5 mg. a day of progesterone delayed return to oestrus but the period over which oestrus recurred showed too much spread. However, when a series of 50 mg. doses of progesterone was followed after 3 days by 8 mg. oestradiol benzoate, all 35 animals showed heat 24 hours later. In 15 such heifers ovulation was verified by rectal palpation and slaughter; one failed to ovulate. As earlier work had shown, the synchronization procedure depressed conception rate to service at the first subsequent heat. With a control conception rate of 51%, there was wide variation according to the hormone dosage given, from 11 to 38%; this latter conception rate resulted from 25 mg. progesterone with 2 mg. oestrogen, which dosage allowed satisfactory synchronization of oestrus. The weaning weights of calves suckled by treated cows were normal, as were those of calves born as a result of service at synchronized oestrus.

—F. L. M. DAWSON.

Lamond, D. R. & Lambourne, L. J. (1961). **Suppression of oestrus in sheep with progesterone.** — Aust. J. agric. Res. 12, 154-162. 2765

Progesterone, at dosages equivalent to 5, 10, or 20 mg. daily, was injected i/m into Merino ewes in the course of 16 days. Injections were daily, every second day, or every fourth day. Injections daily or every 2 days suppressed oestrus in most ewes. Injections every 4 days were less successful. Ewes in late cycle at the time of the first injection tended to experience oestrus at the expected date. The intervals between last injection and oestrus for the 5 mg. mean daily dose rate were 1.6 days (daily injection) and 2 days (injection every 2 days); for the 10 mg. dose 2.3 and 2.6 days; and for the 20 mg. dose 3.8 and 4.4 days.—W. L. HINDMARSH.

Lamond, D. R. (1961). **Rate of absorption of hexoestrol from the ear of sheep.**—Aust. J. agric. Res. 12, 163-170. 2766

Pellets containing varying ratios of hexoestrol to lactose were implanted into ears of sheep, and the proportion of hexoestrol absorbed during periods of 7 to 56 days, was determined. The results of two factorial

experiments showed that absorption was more rapid when pellets were placed in the base of the ear and that absorption from individual pellets was not influenced by implanting in pairs. In addition, hexoestrol in pellets containing high proportions of lactose to hexoestrol was more rapidly absorbed than in those containing small proportions of lactose.

Radford, H. M. (1961). **Photoperiodism and sexual activity in Merino ewes. I. The effect of continuous light on the development of sexual activity. II. The effect of equinoctial light on sexual activity.**—Aust. J. agric. Res. 12, 139-146 & 147-153. 2767

I. Sixteen Merino ewes were subjected to continuous light for 3 years, and their sexual activity was compared with that of 16 ewes under natural light. Oestrus, but not ovulation, was suppressed by continuous light during the first year and was more variable in the second. There was little difference between the two groups in the third year. Seasonal sexual activity of most ewes under continuous light was little different from that of controls. These results do not fit any existing hypothesis for photoperiodic control of sexual activity in Merino ewes.

II. Two groups, each of 5 merino ewes, were exposed to a regime of 12 hours light : 12 hours dark, one group in the autumn and one in early spring. All ewes of the first group failed to experience anoestrus during their first spring but 2 showed anoestrus in the spring of the second year. In the second group 3 experienced anoestrus later in the spring in which treatment commenced and the same 3 during the spring of the second year. R. points out that the continued seasonal variation in sexual activity in equinoctial light is at variance with existing hypotheses for the photoperiodic control of sexual activity in ewes. Alternative explanations are discussed.

—W. L. HINDMARSH.

Watson, R. B. & Gamble, L. C. (1961). **Puberty in the Merino ewe with special reference to the influence of season of birth upon its occurrence.**—Aust. J. agric. Res. 12, 124-138. 2768

Observations were made on mating and lambing in Merino ewes born in spring (Sept.-Oct.), summer (Jan.-Feb.) and winter (May-June). They had been weaned at 13½-14½ weeks and joined with rams within two weeks of weaning, some with fertile and some with vasectomized rams. The ewes and rams ran together until lambing. First oestrus occurred

between late November and May and the first conception between November and June. Of ewes in the spring, summer and winter groups, 78%, 100% and 95% respectively showed oestrus, and 63%, 95% and 80%, respectively, conceived during the first spring, summer and autumn after birth. Sexual season was shorter in young than in mature ewes and in the youngest ewes was only one-third of the length of their second sexual season. The proportion of ewes that lambed was lowest in those that mated youngest and highest in mature ewes.—W. L. HINDMARSH.

Vandeplassche, M. & Bouckaert, J. H. (1961). Comité voor steriliteitsbestrijding veeartsenij-school-Gent. Verslag over het werkjaar 1960. [Committee for the control of sterility, Veterinary College of Ghent. Report for 1960.]—Vlaams diergeneesk. Tijdschr. 30, 56-63. [In Flemish. Summary in English pp. 64-66.] 2769

An oestrogen supplement was incorporated by mistake into a commercial cattle food, with the result that a large proportion of pregnant heifers aborted. It was recommended that performance of bulls should be improved by careful selection, management and feeding. Retention of the placenta was not prevented by daily doses of 30 mg. of stilboestrol for nine days before parturition. Coital exanthema virus was isolated from apparently healthy bulls. Antibodies were demonstrated in the serum of both sexes and in vaginal mucus. A virus closely related to that of coital exanthema was isolated from an aborted foetus. The conception rate at the third insemination in cows injected i/v with oxytocin was 36%, as compared with 62% in controls. Quality of semen collected by massage of the ampullae of the ductus deferens was equal to that collected by other methods. Uterine infusion with penicillin and streptomycin at insemination had no adverse effect on fertility.—E.G.

Barrett, J. F., Moule, G. R., Braden, A. W. H. & Harris, A. N. A. (1961). Cystic glandular hyperplasia of the endometrium in ewes in New South Wales and Queensland. — Aust. vet. J. 37, 14-18. 2770

Since the finding by Bennetts *et al.* [V.B. 17, 1354] that infertility of ewes in western Australia was caused by intensive grazing on subterranean clover and that a constant lesion was cystic glandular hyperplasia of the endometrium, research has been

actively pursued in Australia. This paper reports on the examination of genital organs of experimental sheep, uteruses from slaughtered sheep unlikely to have grazed clover-dominant paddocks, and uteruses of sheep from areas where there was no subterranean clover. The authors state that cystic glandular hyperplasia of the uterus may be far more widespread than has been recognized previously and that it is not confined to sheep grazed continuously on clover dominant pastures. They warn that the occurrence of endometrial cysts should not be regarded as conclusive evidence of impaired fertility.

—W. L. HINDMARSH.

Paterlini, G. & Albertini, A. (1961). Note pratiche nella cura della sterilità equina. [Treatment of sterility in mares.]—Clin. vet., Milano 84, 46-50. 2771

Of 1,535 mares 461 presented reproductive disorders: congenital abnormalities (fibrous hymen with vulvar atresia), 11; genital diseases, 22; atrophic ovaries, 170; delayed rupture of the follicle, 192; follicular cysts, 39; refusal at service, 27. Conception rate was high (1,129) with late spring matings. Pathological conditions were treated with antibiotics while hormones were used, with satisfactory results, for ovarian dysfunction.

—T.E.G.R.

Boyd, H. & Reed, H. C. B. (1961). I. Investigations into the incidence and causes of infertility in dairy cattle—fertility variations. II. Investigations into the incidence and causes of infertility in dairy cattle—influence of some management factors affecting the semen and insemination conditions.—Brit. vet. J. 117, 18-35 & 74-86. 2772

I. Normal fertility variations were followed in 146 Friesian herds in two regions of south-west England. Conception rate as measured by subsequent calving was 60.6% for 5,744 first inseminations and progressively worse to each repeat insemination; this pattern persisted even when cows ultimately culled as permanently infertile (6.6%) were excluded; the incidence of twin pregnancies was 2.7%; following twin births dams had significantly lower fertility when next inseminated. There was no seasonal effect on fertility but heifers had a lower conception rate than cows at their second or third pregnancies; the latter group showed peak fertility 66.8% and there was a progressive decline as cows aged. Individuals with good or poor fertility tended to be consistent from year to year.

II. There was a progressive decline in conception rate with age of semen used from 65.4% with first day fresh semen, to 40% for over third day and for deep-frozen semen.

Conception rate rose steadily with the length of the calving-service interval from 39.5% after less than 40 days to 65.1% after more than 90 days. There was evidence that such factors as these two, and the age of the animal, were additive and independent in depressing fertility.—F. L. M. DAWSON.

Bröker, P. (1960). Störungen der Trächtigkeit, der Geburt, des Puerperiums und der Laktation beim Schwein mit besonderer Berücksichtigung der puerperalen Intoxikation und ihrer Therapie. [**Disorders of pregnancy, farrowing and lactation in sows, with special reference to puerperal intoxication.**]—Inaug. Diss., Hanover pp. 68. 2773

Relatively large foetuses, absence of labour, atony of the uterus, dystocia, foetal

See also absts. 2444-2451 (brucellosis); 2453 (leptospiro abortion in cattle); 2495-2497 (ovine toxoplasmosis as cause of reproduction wastage); 2531 (coital exanthema in mares); 2582 (neorickettsial abortion in cows); 2585 (effect of contagious ophthalmia on multiple lambing and sheep liveweight).

death, insufficient dilatation, prolapse, tetany, torsion of the uterus, etc., accounted for a large proportion of reproductive disorders in sows. Food lacking protein, minerals and vitamins, absorption of uterine discharges into the blood stream during and after birth may result in puerperal autointoxication, complicated by reduced resistance to secondary infections. Suggested remedies were antibiotics and posterior pituitary extracts and prevention by adequate feeding.—E.G.

Marshall, A. J. (1960). **The environment, cyclical reproductive activity and behaviour in birds.**—Symp. zool. Soc. Lond. No. 2 pp. 53-67. 2774

The rhythm of reproduction in birds was analysed. It is partly endogenous, partly exogenous. Stimulating factors are light, warmth, rainfall, food, nest site and nesting material. Inhibitory factors are cold, hunger, fear, and lack of nesting facilities.—M.G.G.

ZOOTECHNY

Francis, J. (1961). **Cattle for the Tropics.** In "Cattle country, an illustrated survey of the Australian beef cattle industry. A directory of studs." [Sydney: F. H. Johnston Publishing Co. Pty. Ltd.] 2775

This is an interesting short account of the various importations into Australia of zebu cattle either from India or America and of the influence they have had on the cattle of the more tropical part of Australia. Resistance to ticks, to heat and to drought are qualities of great importance and the author considers that big advances will be made quite rapidly in Northern Queensland.

Compiled by: Culey, A. G. (1961). **Bibliography of beef production in Australia (c 1930-1958).** pp. 239. Sydney: McMaster Animal Health Laboratory, C.S.I.R.O. 2776

This bibliography covers papers on all phases of the beef cattle industry in Australia published between 1930 and 1958 and a few dating back to 1917. Papers dealing exclusively with dairy farming and pasture management have been excluded. The different sections include breeding, management, equipment, physiology, nutrition, poisoning, diseases, parasites, beef production, transport, legislation, and statistics. Within the sections the arrangement of

references is chronological. There are over 3,000 references to articles in Australian journals, and the contents of Annual Reports published in Australia since 1925 are documented fully. A list of the publications that were searched, an author index, and a subject index are appended. This bibliography may be obtained free of charge on application to the Librarian of the McMaster Animal Health Laboratory.—M.G.G.

Hull, J. L., Lofgreen, G. P. & Meyer, J. H. (1960). **Continuous versus intermittent observations in behaviour studies with grazing cattle.**—J. Anim. Sci. 19, 1204-1207. 2777

By comparing data obtained by continuous observation of the habits of cattle with those obtained by recording only at intervals of 15 min., 30 min., or 60 min., it was found that, provided the interval between observations be no greater than 30 min., a reliable estimate of the duration of the major behaviour patterns can be obtained. This permits one person to make observations on a number of animals during one recording period and thus to avoid the individual-variation pitfall.—A. BROWNLEE.

Storr, G. M. (1961). **Microscopic analysis of faeces, a technique for ascertaining the diet**

of herbivorous mammals. — Aust. J. biol. Sci. 14, 157-164. [Author's summary modified.] 2778

A technique used in studies of the diet of kangaroos and wallabies is based on the identification of plants by the epidermis of leaves and stems in the faeces. Data are qualitative and quantitative because (1) there is little or no digestion of epidermis encased in cutin, (2) epidermis is usually identifiable to species under low-power microscope, and (3) there is a determinable relation in each species of plant between the surface area and dry weight of its foliage.

Tuffery, A. A. (1961). **United Nations. Report to the Governments of Afghanistan, Pakistan and Turkey on the breeding of white mice for laboratory use.** pp. 16. Rome: Food and Agriculture Organization of the United Nations. [FAO/ETAP Report No. 1313.] 2779

The author spent about a week at each of 3 institutes in Kabul, Peshawar, and Elazig, and gave advice on the establishment and management of healthy mouse colonies needed for the production of vaccine against African horse-sickness. He recommended that staff from these institutes be sent abroad to study the breeding of small animals in laboratories.—M.G.G.

TECHNIQUE AND APPARATUS

Arndt, J. (1960). Die Occipitalpunktion beim Schwein. [**Occipital puncture in pigs.**] — Inaug. Diss., Hanover pp. 45. 2780

A description of the technique of collection of c.s. fluid from 47 pigs weighing up to 40 kg., by medial puncture of the atlanto-suboccipital space. After six hours, however, there was generally some degree of ataxia and in most stupor persisted up to 24 hours. About 40% of the samples contained blood, four pigs died of meningeal or cerebellar haemorrhages and lesions and three of mishaps during anaesthesia. Methods of examination of c.s. fluid were described.

—E.G.

Newcomb, W. C. (1961). **Bovine dental crowns introduce new professional service.** — Vet. Med. 56, 56-57. 2781

Stainless steel caps cemented on to the

incisor and cuspid teeth of cattle have remained in position for 18 months. They are expected to last 3-5 years. Their purpose is to stop premature abrasion of the teeth in cows grazing sandy pastures.—M.G.G.

Holden, H. F. (1960). **Blood pH determination.**—Aust. J. exp. Biol. med. Sci. 38, 419-425. 2782

A simple and inexpensive apparatus for the measurement of pH at 38°C. using only 0.15 to 0.2 ml. of blood is described in detail. A series of readings were made on a number of buffers and on a sample of blood to give reproducible results. Measurements made on an alkaline phosphate buffer were in agreement with the measurement obtained with a large electrode.—K. J. FARRINGTON.

See also absts. 2564 (cultivation of fowl plague and Newcastle disease viruses in tissue culture); 2583 (growth of Q fever organism in tissue culture).

REPORTS

Great Britain. (1960). **Report of the Agricultural Research Council for the year 1958-59.** pp. 213. London: H.M. Stat. Off. 9s. 2783

On FOOT AND MOUTH DISEASE a short review is given as an appreciation of the advances that have been made in research into this disease and to indicate the increasing contribution that the Pirbright Institute has been making since greater facilities have been made available.

The Gower Committee which reported in 1954, made a number of valuable recommendations for alterations and improvements for dealing with the disease but gave full support to the stamping-out policy, involving

slaughter of infected and in-contact animals and accompanying measures for the prevention of the spread of infection.

At present vaccines are available for the three types of virus which are found in Europe and South America; A, O and C. Three other immunological separate types occurring in Africa have been recognized at Pirbright: S.A.T. I, S.A.T. II, S.A.T. III; and in Asia a separate type, Asia I is met with.

In recognition of the work it had already done the Pirbright Institute was designated a World Reference Centre for foot and mouth disease, following negotiations between F.A.O.

and H.M. Government. This development has the support of the European Commission for the control of foot and mouth disease.

BLOOD TYPES IN CATTLE:—The modern approach to blood groups in cattle led a few men of vision to see that the study of blood groups need no longer be confined to the field of therapeutic blood transfusion, but might provide means, hitherto lacking, for studying the genetic constitution of men and animals.

There are three principal conditions in ruminants which are classified as **METABOLIC DISEASES**: those that are characterized by a disturbance in the mineral composition of the blood; those characterized by an accumulation of ketone bodies in the blood and often by a reduction in the concentration of blood sugar; and those characterized by acute indigestion accompanied by gross distension of the rumen by gas.

The two illnesses of the first category in cattle are **MILK FEVER** and **GRASS TETANY**. The second group includes acetonaemia, now called **KETOSIS** of dairy cattle, and twin lamb disease or **PREGNANCY TOXAEMIA** in ewes.

The third category consists of the disorders known as **BLOAT** in which the rumen is distended with a foaming mass of food in which the gas is trapped. In connexion with these conditions a list of 44 publications is appended.

The Report also gives details of a large number of committees, research institutes, colleges and so on to which the A.R.C. gives grants.—D. S. RABAGLIATI.

Jamaica. (1959). **Annual Report of the Ministry of Agriculture and Lands for the year ending 31st December, 1958.** pp. 92. Kingston: Government Printer. 4s. [Veterinary division pp. 60-62.] 2784

Deaths from **ANTHRAX** and **BLACKLEG** occurred in small numbers in the areas where these diseases are endemic. **TUBERCULOSIS**—The proportion of positive reactions fell from 0.04% in 1957 to 0.003%. **BRUCELLOSIS**—Tests of 1,600 cattle showed 0.5% infected. **MASTITIS** in dairy herds remains a problem. There is no change in the situation. **INFECTIOUS KERATITIS** in cattle occurred on 40 farms in one Parish. *Vibrio fetus* infection was diagnosed in 2 dairy herds. It did not spread to other herds.

VIRUS PNEUMONIA occurred in shipments of pigs from Great Britain. The importation of pigs was suspended and plans for breeding virus pneumonia free pigs are being operated.

Vaccinations carried out were **SWINE FEVER** 639; **ANTHRAX** 101; **BLACKLEG** 2,360; **BRUCELLOSIS** 426; and **NEWCASTLE DISEASE** 17,000 birds.

Limnaea cubensis has been identified as an intermediate host of *Fasciola hepatica*. Further investigations are being made to find other vectors.

Trials of commercial **NEWCASTLE DISEASE** vaccines in use in Jamaica showed that 3 of 6 gave no protection whatever. One vaccine given intranasally protected only 50% of birds. Two of the vaccines protected all. One of the vaccines which failed to protect was 2 years old and two other vaccines which did not protect were to be given orally. All these vaccines were made by American commercial laboratories which produce vaccines under licence for use in the U.S.A. under strict Government control for their use in the U.S.A.

A test for **PULLORUM DISEASE** in 1,028 birds showed only 3 positive and 7 doubtful reactions.

VIBRIOSIS—In a survey of 18 bulls, 65 heifers, and 285 cows which was started in 1956, the conception rate was at first 15%, based on non-return to a first insemination; in 1958 it was 51%.—J. A. GRIFFITHS.

Anon. (1960). Norway. Veterinaervesenet 1956. [Report of the Norwegian Veterinary Service for 1956.]—Norges offisielle Statistikk Ser. 12 No. 20 pp. 127. [In Norwegian.] 2785

During the period under review Norway was free from rinderpest, equine and bovine contagious pleuropneumonia, glanders, rabies, F. & M. disease, swine fever, equine pustular stomatitis, strangles and foot rot. TB. was reported in 54 cattle and 252 pigs, equine infectious anaemia in 5 horses, swine erysipelas in 14,322 pigs, coccidiosis in 65,069 fowls, streptococcal and other forms of mastitis in 28,725 cows. Liver fluke was present in 2,095 cattle and 15,313 sheep. Details of other infectious or non-infectious diseases and meat inspection were given in tables. Registered veterinary surgeons numbered 566.—E.G.

BOOK REVIEWS

Pallaske, G. (1961). *Pathologische Anatomie und Pathogenese der spontanen Tuberkulose der Tiere. [Pathological anatomy and pathogenesis of spontaneous tuberculosis in animals.]* pp. x+152. Stuttgart: Gustav Fischer. DM. 28. **2786**

Because some 30 years have elapsed since Nieberle's fundamental studies on the pathology of tuberculosis, Pallaske has written this monograph in order to bring the subject up to date. Attention is paid to forms of the disease that occur in the different species of domestic and zoo mammals and birds, modes of excretion of the organism and the role of infected meat and milk in spread of the disease. This is not so much a review of the literature as a concise account of the present state of knowledge. The author is Director of the Veterinary Pathological Institute at the Justus Liebig University in Giessen. There are 48 illustrations of lesions on 2 colour plates and 6 black-and-white plates.—R.M.

Willis, R. A. (1960). *Pathology of tumours.* pp. xvi+1002. London: Butterworths. 3rd edit. 105s. **2787**

The first edition of this book was reviewed in this Bulletin [*V.B.* **19**, 1413]. For this third edition, the whole work has been revised, with special attention to certain aspects, such as the experimental production of tumours, and to certain tumour types. As usual the photographs and the list of references, all to works personally studied by the author, will be found invaluable aids. The text is not so restricted as the title might suggest, as besides accounts of the macroscopic and histological features of tumours, there are discussions of other aspects of tumours, such as their frequency, age, site, sex and species incidence, and of special aetiological factors that might be significant.

The author is well known for his interest in the comparative aspects of tumours, and he has himself studied a number of tumours from domesticated animals. Throughout the book, he directs the attention of his medical readers to important comparative aspects, and they should gain a well-founded appreciation of the significance of comparative oncological studies. It is true that, here and there, some statements appear to lay too little stress on some animal tumours, and perhaps over-emphasize the importance of others, but for details of the tumours of domesticated animals

the reader will look elsewhere.

All veterinary pathologists who have anything to do with the diagnosis of tumours will know, or will soon learn, that this is an indispensable work of reference.

—E. COTCHIN.

Skrjabin, K. I., Shikhobalova, N. P. & Shul'ts [Schulz], R. S. (1960). *Essentials of nematodology. Volume III. Trichostrongylids of animals and man.* pp. 704. Jerusalem: Israel Program for Scientific Translations [for the National Science Foundation, Washington, D.C., and the Department of Agriculture, U.S.A.] 105s. **2788**

The National Science Foundation, Washington, and the U.S. Department of Agriculture, together with the Israel Programme for Scientific Translations, must be congratulated for making available an English translation of this important Russian textbook.

As the title indicates, the book is concerned with the nematodes of the family Trichostrongylidae. Brief chapters deal with anatomy, morphology, general biology and classification, but the bulk of the book is devoted to keys and descriptions of the genera and species. Numerous line diagrams illustrate the text but unfortunately they do not compare favourably with those in the original Russian publication. Many of them have been reduced in size (presumably to keep down the cost of the book) resulting in so much loss of detail that they are of little value as aids to identification.

The authors did a most valuable service for the helminthologist in bringing together so much information which hitherto was scattered throughout the world literature. Unfortunately, however, the language difficulty limited the usefulness of the original text. Now, thanks to the able work of the translators this difficulty has been overcome, and the book should prove of use to a wide public. Veterinarians should find it a useful reference as the descriptions of the important trichostrongylids of farm stock are fuller and better than those in most textbooks of veterinary parasitology.—J. ROSE.

Anon. (1961). *New and nonofficial drugs 1961.* pp. xxix+849. Philadelphia (& Montreal): J. B. Lippincott Company. London: Pitman Medical Publishing Co. Ltd. 30s. **2789**

The scope and form of this annual are

the same as last year [*V.B.* 30, 3123]. Since last year's edition 54 drugs have been approved by The American Medical Association. These include a cholinesterase inhibitor (ambenonium chloride), 4 parasympatholytic or cholinergic blocking agents (biperiden, chlorphenoxamine and pipethane hydrochlorides; demecarium bromide), a radio-opaque organic iodine contrast medium (bunamiodyl sodium), 2 hypoglycaemic agents (chlorpropamide and phenformin hydrochloride), 4 glucocorticoids (dexamethasone, fluoromethalone and the acetate and sodium succinate of methylprednisolone), 4 antihistamines (dextbrompheniramine and dexchlorpheiramine maleates; methdilazine and triprolidine hydrochlorides).

New chemotherapeutic drugs include erythromycin propionate lauryl sulphate (a salt suitable for oral administration), furaltadone (a nitrofurane), sulfadimethoxine (a long-acting sulphonamide), and triclobisium chloride (an anti-bacterial agent suitable for application to the skin and the vagina, also effective against *Trichomonas vaginalis*).

Drugs acting on the central nervous system include one anaesthetic (methohexital sodium or Brevital), 3 tranquilizers (methoxypromazine maleate, oxanamide or Quiactin, and pipamazine or Mornidine), an anti-convulsant (methsuximide or Celontin), and 2 psychomotor stimulants (imipramine hydrochloride and nialamide) and 2 analgesics (ethoheptazine citrate and oxymorphone hydrochloride). There are two new muscle relaxants (methocarbamol and styramate).

Among the miscellaneous drugs are one for motion sickness (trimethobenzamide hydrochloride or Tigan), and an anti-neoplastic agent (thio-tepa).—R.M.

Krumbiegel, I. (1960). Die Rudimentation. Eine monographische Studie. [**Rudimentation: the study of vestigial organs and functions in the animal kingdom.**] pp. 144. Stuttgart: Gustav Fischer. DM 25.80. 2790

A monograph, with 113 illustrations, on organs, body functions and behaviour patterns that have become redundant in the course of evolution. It is a book for biologists and zoologists. There is no special veterinary interest.—R.M.

Kon, S. K. & Cowie, A. T. [Edited by.] (1961). **Milk: the mammary gland and its**

secretion. Vol. I. pp. xiii+515. New York (& London): Academic Press. 100s. 2791

This book is written for research workers, each of its 12 chapters being a review of an aspect of mammary physiology by an acknowledged expert of international repute. The title is curious; 'milk' seems to be superfluous and anyway is not dealt with in this volume, which is divided into 4 sections: I. The mammary gland: morphogenesis, structure and growth; II. Functional physiology of the mammary gland; III. Lactation in man and farm animals; IV. Biochemical activities of the mammary gland.

Most workers in the field will want to read these reviews but since similar articles do appear in the literature (admittedly widely scattered) the justification for producing books of this sort would seem to be twofold. First it is convenient to have serious reviews collected together without undue overlapping. Secondly, such books have to serve as up-to-date reference works now that it is unfortunately increasingly difficult for one author to produce an exhaustive standard work even on the physiology of one organ.

As an assessment of current knowledge this book is highly satisfactory. The articles are authoritative, thoroughly documented, thoughtful and eminently readable. As a reference work it contains a great deal of information, or equally important, shows where it can be found. It can be recommended as an excellent summary of current knowledge, quite suitable for new workers coming into the field.

Unfortunately this expensive book can be criticised on two counts; first because there seems to have been some delay in its publication and secondly for its poor index. Most of the chapters appear to have been originally written in 1957 or 58 and although some references to work published in 1959 (one from 1960) have been included (perhaps in proof) only a few chapters seem to have been brought up to date by notes added in proof or by the inclusion of new sections. There is more in the book than the subject index would suggest. For example, many of the chapter sub-section headings do not appear in the index. More serious than this, such subjects as electron microscopy, tissue culture, perfusion and blood flow are referred to in the book and yet they were not to be found in the index. Both these features must be galling to the authors and they do detract from the

value of the book to the reader.

—J. L. LINZELL.

de Ong, E. R. (1960). **Chemical and natural control of pests.** pp. viii+244. New York: Reinhold Publishing Corporation. London: Chapman & Hall, Ltd. 60s. 2792

The author first deals with the natural control of insect pests by parasites, predators and insect diseases, and by the development of both disease resistant and insect resistant plants. Different types of insecticide are then considered and their use described against pests of field crops, fruit trees, livestock, etc., with additional chapters on household pests and rodent control. A balance is struck between the merits of natural and chemical control, stressing the problems of insect resistance and residue hazards in foodstuffs.

The style tends to be rather disjointed and it is a pity that there is scarcely a single reference to the work done outside America, but this is nevertheless a very useful book—although rather expensive. A handy appendix includes the common and chemical names of over 150 pesticides.—W. N. BEESLEY.

Bicknell, F. (1960). **Chemicals in food and in farm produce: their harmful effects.** pp. 192. London: Faber & Faber. 12s. 6d. 2793

Dr. Bicknell discusses the immediate and long term effects on man of the many chemicals now used in agriculture, food processing, preservation, flavouring etc. He rather pessimistically surveys the odds against us in our struggle for good health in the face of chemical food adulterants, and he is frequently preoccupied with the discussion of both relevant and obscure findings in the difficult field of carcinogens. A chapter on colouring chemicals and cancer concludes with the grim warning "It is not wise to eat any artificially coloured food, such as jams, iced cakes, sweets, ices, canned peas, margarine, custard powder, etc." However, the author certainly mentions most of the chemicals that can even remotely be classed as toxic and the result is a very interesting little book.

Included are a useful chemical appendix and nearly 300 references, many selected from the literature of the past five years.

—W. N. BEESLEY.

Wood, R. K. S. [Edited by.] (1960). **Biological problems arising from the control of pests and diseases. Symposia of the Institute**

of Biology, No. 9. pp. viii+120. London: The Institute of Biology. 25s. 2794

This Ninth Symposium of the Institute of Biology brought together a number of specialized interests on the control of diseases among crops, communities of animals and of man, the common meeting point being the problems associated with each particular method, in its operation. The title of the Symposium appears to have been a difficult one, however, in requiring contributors to speak of problems arising *from* the control, and not those arising *during* control by the methods used. Most of the speakers dealt with the success of control procedures and the reasons for results sometimes falling below expectations. This, presumably, was not the original intention of the organizers of the Symposium, and it may, perhaps be concluded from the avoidance of this issue that successful control in many of the fields has not given rise to new problems of any significance. The consequences that were recognized, however, included the development of strains of organisms resistant to toxicants or to antibiotics, the production of susceptible communities of man or of animals through a too successful protection of the young against infection, and the outstanding problem (one that now begins to appear large on the horizon), that of the overpopulation of the earth by man himself.

The twelve contributions to the Symposium do, however, provide valuable summaries of the many and varied ways in which pests and diseases have been brought, at least, under partial control, and the unexpected difficulties that have arisen during the application of the newer methods, in the widespread use of insecticides and toxicants, in the control of animal disease, control of sleeping sickness, of malaria, in the destruction of bacteria by antibiotics, and finally, on the supplanting of natural selection by ethical selection in mankind. It would appear that there has been a tendency to exaggerate the importance of the unexpected side-effects of our control measures, as in almost every instance they are considerably less damaging than were the ills originally suffered. One may gather the general indication that whatever difficulties may arise through the ability of parasites to adapt to new hosts, or to develop resistance to new antibiotic substances or toxicants, the industry and ingenuity of man will enable him to keep one move ahead.

—E. L. TAYLOR.

- Koch, T. (1961). Zur Geschichte des Pferdes. [**History of the horse.**] pp. vii+108. Jena: Gustav Fischer. DM 10.70. 2795
A well-produced brief outline of the

history of the horse and its role in relation to the history of mankind, containing 35 illustrations, a number of tables, references and a useful glossary.—E.G.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

- Bressou, C. (1961). Aide-mémoire d'ostéologie comparée des animaux domestiques. [**Guide to comparative osteology of the domestic animals.**] pp. 110. Paris: Vigot Frères. 2nd edit.
- Broustail, M. (1961). La souris de laboratoire et son élevage. [**The breeding and management of laboratory white mice.**] pp. 70. Paris: Vigot Frères. 2nd Edit.
- Ershov, V. S. [Edited by] (1960). **Parasitology and parasitic diseases of livestock.** pp. 523. Jerusalem: **The Israel Program for Scientific Translations** [for the National Science Foundation, Washington, D.C., and the Department of Agriculture, U.S.A.]. 90s.
- Euzéby, J. (1961). Les maladies vermineuses des animaux domestiques et leurs incidences sur la pathologie humaine. Tome Premier: Maladies dues aux Némathelminthes. Fascicule Premier. [**Diseases of domestic animals caused by helminths and their occurrence in human beings. Volume I. Diseases caused by Nematelminthes, Part One.**] pp. viii+473. Paris: Vigot Frères.
- Gross, L. (1961). **Oncogenic viruses.** pp. xi+393. Oxford: Pergamon Press. 80s.
- Marsh, L. (1961). Newsom: Les maladies du mouton. [**Newsom's Sheep diseases.**] pp. 447. Paris: Vigot Frères.

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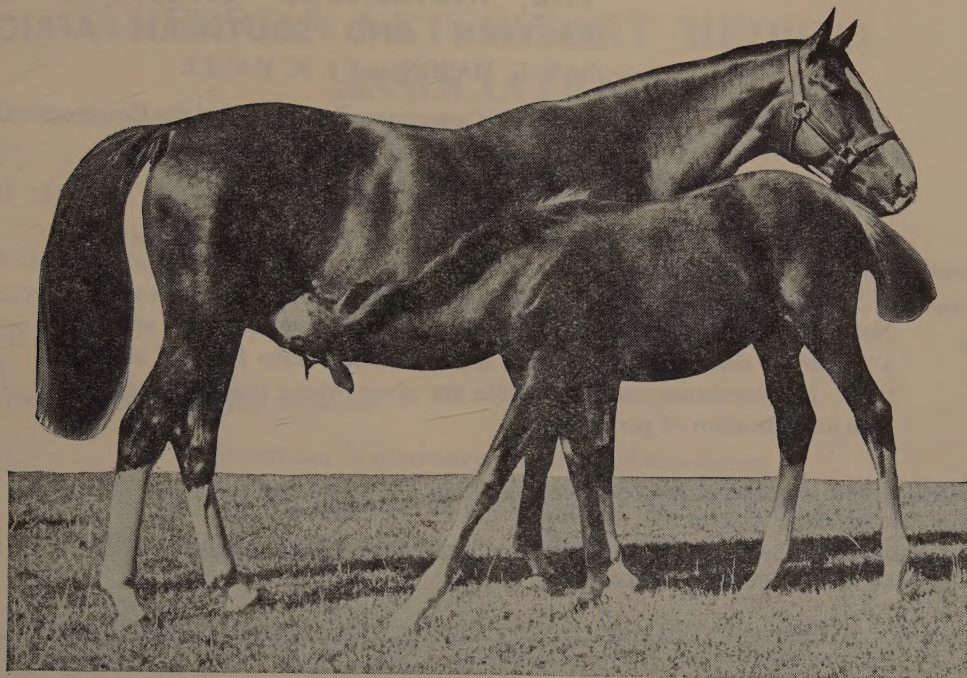
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